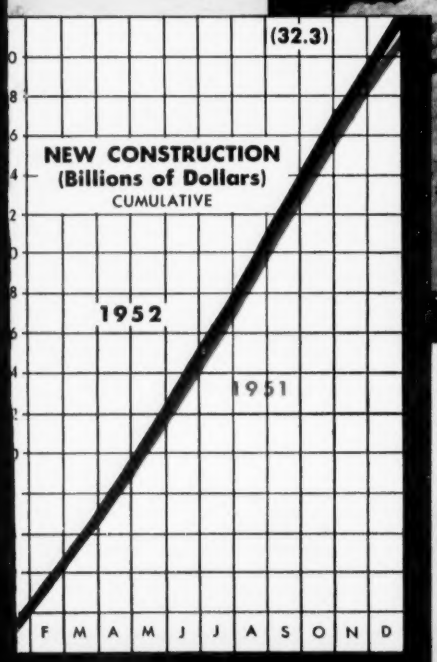
The CONSTRUCTOR

OFFICIAL PUBLICATION OF THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

Volume XXXV **JANUARY 1953** Number 1

- BUILDINGS
- HIGHWAYS
- AIRPORTS
- RAILROADS
- PUBLIC WORKS



A.G.C. Annual Review and 1953 Outlook—21

Steel Allotments Raised, Controls Eased—27

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All Wheel Drive and All Wheel Steer

Yes, whether it's pulling a wet ditch, with the rear drivers up where the footing is good; or finishing a wide shoulder without leaving tire marks; or reaching out for a tremendous windrow and missing it with all wheels; or steering the rear wheels against the side thrust when widening out... whatever the season... whatever the job... All-Wheel Drive and All-Wheel Steer work together as a team... each making the other just that much more effective.

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Ryerson deliveries are flexible—can be stepped up should the job jump ahead of schedule, slowed down if materials begin to pile up on the site. So be sure of a fast start and completion on schedule. Next job, let us quote you our lump sum or average pound price.

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Extra workability and plasticity due to exceptional water retention . . . brick and block bed easier, minimum droppage, smoother work schedules;

Soundness, low absorption, high water repellency . . . durable, weather-resistant performance.

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The CONSTRUCTOR

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COVER

Days of railroad pioneering are being recalled as construction of a 350-mi. line pushes forward in the far reaches of Labrador. The cover photo, by John A. Rodriguez, a member of the contracting firm, shows one of the big culvert operations required. This 120-in. pipe (174 ft. long) is shown being laid under grade at Mile 19. About 81,000 ft. of corrugated iron culvert, ranging from 24 in. to 144 in., is being installed along the route. Steel has been laid for about 190 mi. thus far. Joint venturers are Cartier-McNamara-Mannix-Morrison-Knudsen.

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January, 1953

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Another new peak in the total volume of construction activity—possibly reaching $44 billion in the United States—is probable in 1953, and an additional $1 billion is expected to be invested in overseas construction by the federal government. The Associated General Contractors of America announced this month. At the same time the A.G.C. estimated an all-time record of $42.3 billion in total construction was put in place in the U. S. during 1952, representing more than 12% of the nation's estimated gross national product. New construction last year totaled about $32.3 billion and could reach $33.5 billion this year. (Page 21)

Good business in 1953 and a basic long-range strength in the nation's economy were indicated in a comprehensive report, *Markets After the Defense Expansion,* released by Commerce Department at year's end. The six-month study by many noted economists in cooperation with the department and the Committee for Economic Development, notes that while a downturn in 1954 is a "real possibility," the case for it seems not much stronger than that which could be usually made this far in advance of any date.

Popular theories about construction industry, including idea that it is subject to 20-year cycles and triggers off general depressions, are punctured in a book-long study released by CED. (Page 24)

Biggest relaxation of construction controls since their advent in October 1950 went into effect this month. Developments were: Amounts of steel and copper which can be self-certified for most kinds of small construction projects were increased; allotments of steel, copper and aluminum for second quarter of 1953 were increased for construction purposes and will permit highest rate of highway construction in history. There is evidence there may be only stand-by controls for use in extreme emergency. (Page 27)

Renegotiation Staff Bulletin No. 12, titled, "Guide for Renegotiation of Construction and Architect-Engineer Contracts," was issued Dec. 24 by the Renegotiation Board. It was prepared by a special group of construction and engineering experts from defense agencies working with the Board's staff, and its main purpose is to indoctrinate renegotiation personnel in the special problems found in such contracts. (Page 24)

Construction Industry Stabilization Commission, it appears, will continue to administer the wage stabilization program in the construction industry until such time as the new Congress and the new Administration formulate their policies on wage, price and materials controls. (Page 31)

Prospects good for continuation of the National Joint Board for the Settlement of Jurisdictional Disputes beyond the expiration date of March 31, according to year-end reports. During the past year the board continued to bring about a gradual reduction of work stoppages caused by jurisdictional disputes. (Page 31)

A.A.S.H.O. asks $800 million annual federal gasoline taxes be used exclusively for federal aid to highways. In renewing its drive for more highway funds the officials deplored diversion of the gasoline taxes to other uses and labeled the practice "a violation of the principle of anti-diversion" recognized by all highway authorities as a basis for equitable highway financing. (Page 46)

$10.7 billion in school construction expenditures needed to bring the nation's school system up to par, the U. S. Office of Education reported in a recent survey. The comprehensive, state-by-state appraisal of elementary and secondary school construction needs indicates a nationwide shortage of 325,280 classrooms as of Sept. 1952, or housing for 9.4 million students. Appeals for federal aid to help finance the load are expected. (Page 36)

U. S. needs 10,058 disposal plants, costing $19 billion, to keep its streams and rivers clean. The President's Water Resources Policy Commission recently reported that "polluted water threatens life and health, blocks the expansion of industry and increases the cost of its products." To offset this menace, the Public Health Service estimates 10,058 in new facilities are needed. States are giving greater attention to this field. (Page 52)

Maj. Gen. George J. Nold, deputy chief, Corps of Engineers, will leave early next month for new assignment in Europe to organize a central construction authority for France, Army Secretary Frank Pace, Jr., announced last month.

A.G.C. officials visit southern chapters discussing the No. 1 question of the nation's No. 1 industry—What does the future hold for construction? President Arthur S. Horner, Presidential Nominee C. P. Street and Managing Director H. E. Foreman agreed on one thing in their swing through Florida, Georgia, Alabama, Louisiana and Texas: If war is averted and the nation's economy remains dynamic, the construction industry will expand with it. (Page 67)

Revised A.G.C. safety manual published last month with few changes over the last revised edition of 1949. The preface of the book, *The Manual of Accident Prevention in Construction,* states "no deviation has been made from previous editions with respect to the practical and common sense approach to the subject of accident prevention." (Page 58)

House investigators last month accused the military of using the Korean war to get money from Congress for unnecessary military construction. The House Government Operations Subcommittee, which has been studying waste in military construction cited specific cases in which the armed forces wasted money on all sorts of costly "frills and extras."

34th Annual Convention of the A.G.C., in Miami, March 23-26, will examine the changing picture of the construction industry, recently given greater latitude in civilian projects while the defense construction is carried forward under a new Administration. Key persons in the public, private and defense spheres of construction—the nation's No. 1 industry, are expected to address the convention. (Page 64)

HIGH LIFTS

made Easy!

A *good* crane is *good* on *every* crane job! It's more than just a boom—or a feature—a clutch or a hoisting mechanism. It's a combination of a basic machine with its multiplicity of advantages—a combination of design, materials, balance, engineering—all the tangible and intangible qualities that result from years of experience.

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- BALL AND ROLLER BEARINGS on all high-speed shafts always have been standard equipment on Northwests.
- CAST STEEL BASES WITH CAST STEEL MACHINERY SIDE FRAMES are typical of Northwest design for permanence of shaft alignment and rigidity.
- CUSHION CLUTCH eliminates the effects of shock overloads to parts under power.
- ALL NORTHWESTS are easily convertible from Shovel to Crane, Dragline or Pullshovel.

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CRAWLER and TRUCK MOUNTED SHOVELS • CRANES • DRAGLINES • PULLSHOVELS

A Series of Graphs Outlining the Construction Trend

Compiled by The Associated General Contractors of America

TREND OF CONSTRUCTION COSTS

The average of construction costs in the principal construction centers of the United States for December stands at Index Number 399, according to the A.G.C. Index. The cost figure for December 1951 was 380. The 1913 average equals 100.

WAGE AND MATERIAL PRICE TRENDS

The average of wages in the principal construction centers of the United States stands at 557 for December. One year ago the average stood at 512. The average prices paid by contractors for basic construction materials for December stand at Index Number 294. The average a year ago stood at 292. The 1913 average, again, equals 100.

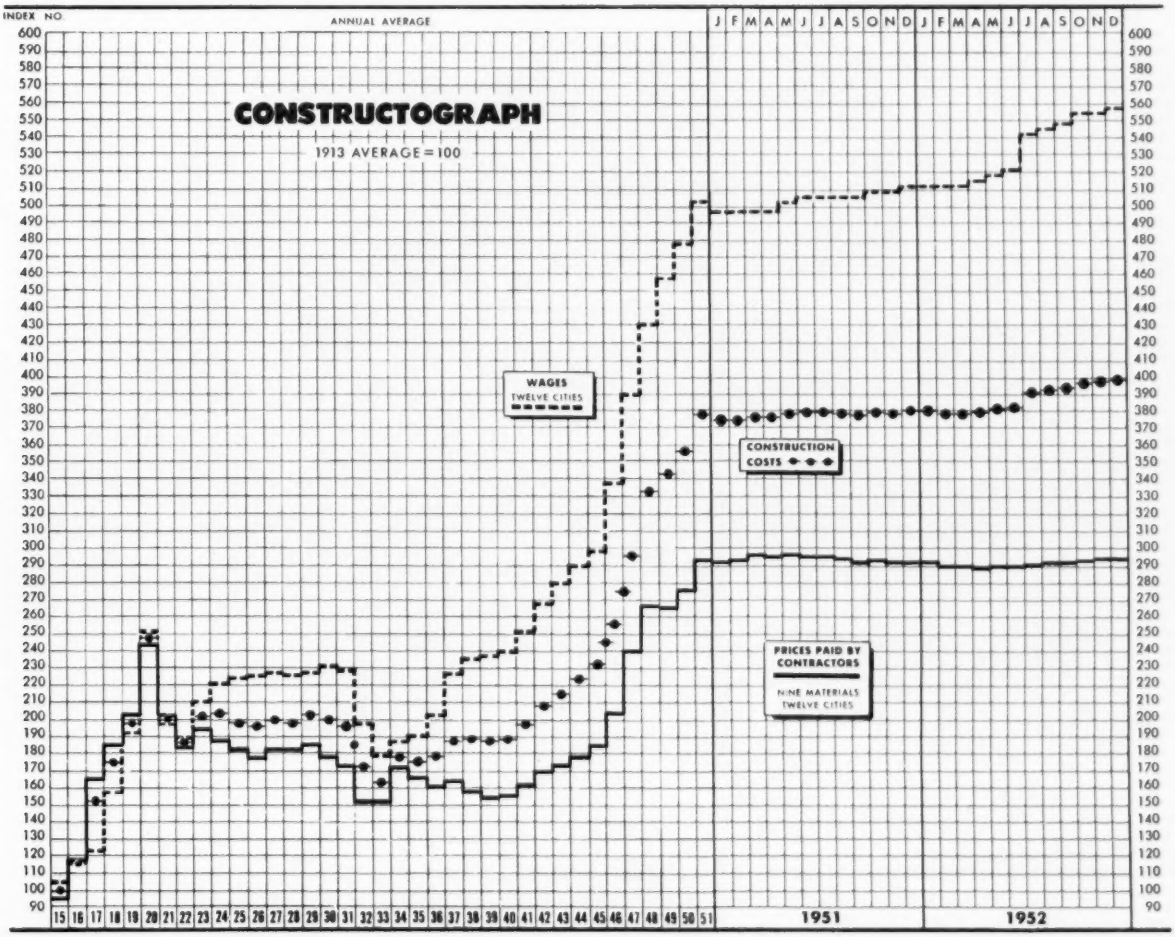
CONTRACT AWARDS IN 37 STATES

The volume of contracts awarded during November (Index Number 237, based on 1936-1938) is a decrease of 12 points from October and an increase of 51 points from Nov. 1951. (F. W. Dodge Corp.)

REVENUE FREIGHT LOADINGS

Revenue freight loaded during the first 50 weeks of 1952 totaled 36,752,399 cars. For the same period in 1951, loadings amounted to 39,325,812 cars. This represents a decrease of 6.5%.

● Wage, Material Price and Construction Cost Trends



Helping build America's might...

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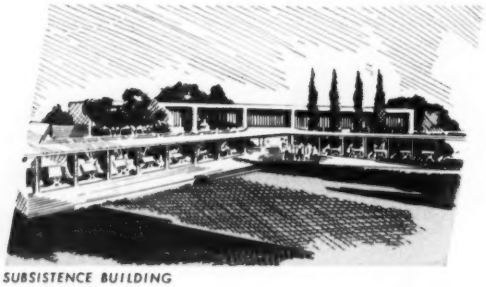
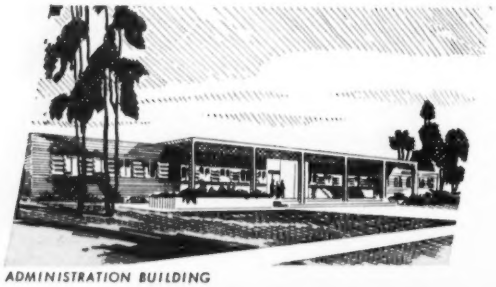


SUBSISTENCE BUILDING



ADMINISTRATION BUILDING

Across the nation *the military bases of the Armed Forces are expanding . . . offering evidence of America's might. Aiding in this immense effort . . . Ceco Steel Products Corporation brings a one-source service to the military, speeding the all-important task . . . saving money, too. For Ceco's network of coast to coast plants means men and materials can be quickly brought to the area of need. Here are military projects currently served by Ceco: Ft. Knox, Ky. . . . concrete floor joists, steel windows and screens and reinforcing bars . . . Ft. Campbell, Ky. . . . steelforms, reinforcing steel, steel windows and screens . . . Camp Pendleton, Calif. . . . reinforcing steel, architectural projected windows and screens . . . Ft. Eustis, Va. . . . concrete joist construction, steel windows and screens.*

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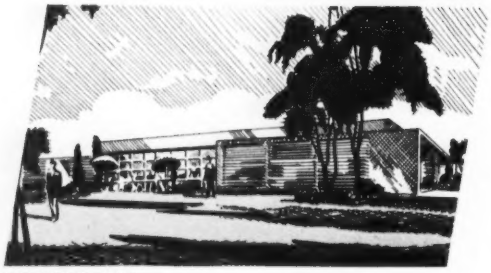

RECREATION UNIT

BARRACKS

Chanute Field, Ill. . . . steel casements and screens . . Corpus Christi Naval Training Station . . . steel windows, steelforms and reinforcing steel . . . Sheppard Air Force Base . . . steel windows, steelforms and reinforcing steel. Offut Air Force Base . . . reinforcing steel, steelforms, welded wire fabric and steel casements.

America's defense is speeded today because military men, the architect, engineer and contractor, found at Ceco a one-source service tailored to fit the job to be done.

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In construction products

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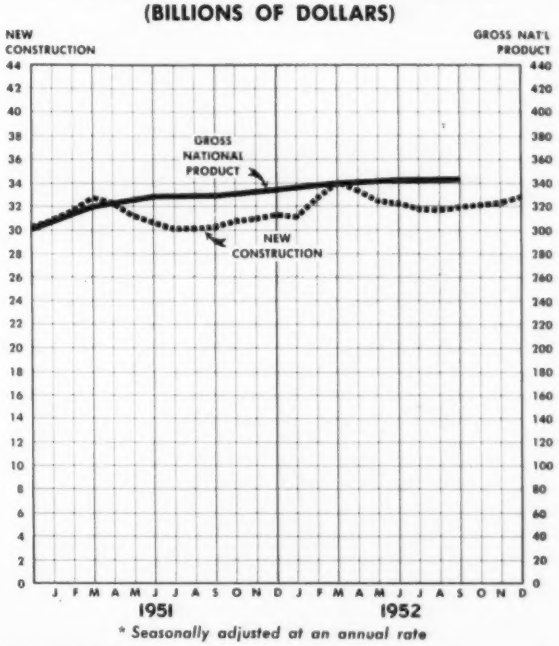
● TOTAL Construction compared with Gross National Product

(BILLIONS OF DOLLARS)

DATA SUPPLIED BY DEPT. OF COMMERCE

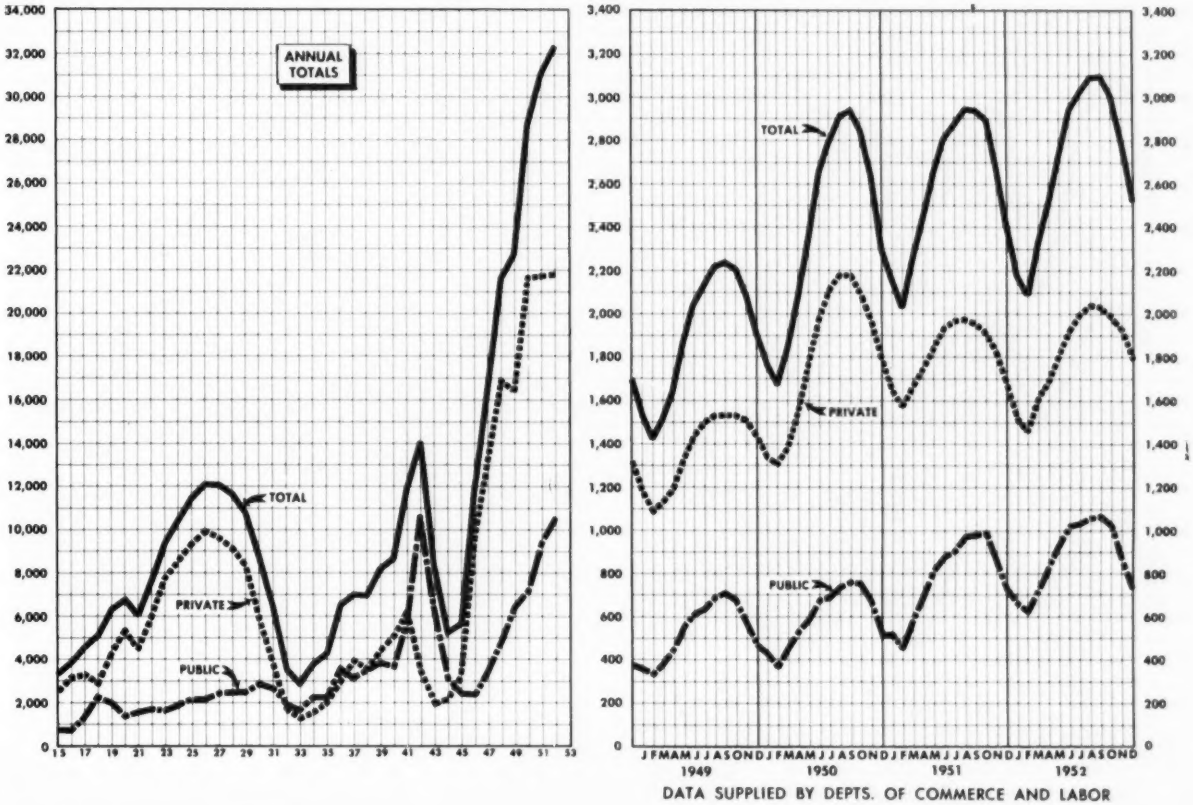
● NEW Construction Compared with Gross National Product*

(BILLIONS OF DOLLARS)



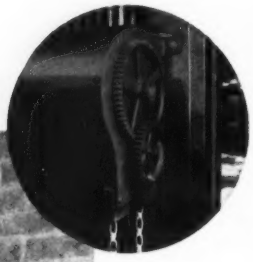
** Seasonally adjusted at an annual rate*

● New Construction Activity (MILLIONS OF DOLLARS)

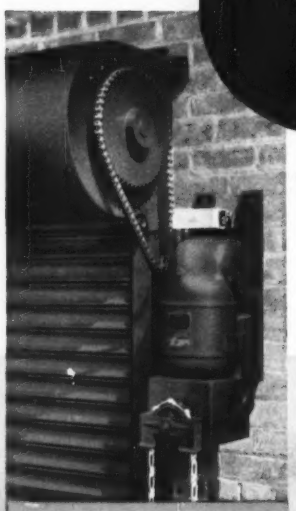


DATA SUPPLIED BY DEPTS. OF COMMERCE AND LABOR

Rolling Steel DOORS



MAHON CHAIN-GEAR OPERATOR



MAHON STANDARD POWER OPERATOR 920-P

Manually, Mechanically, or Power Operated

Illustrated below is another excellent example of Rolling Steel Doors installed in a special purpose building where no other type of door would meet the requirements. Because this is a foundry building with high truss clearance, vertical acting doors with no overhead obstructions above the floor adjacent to the door opening were demanded by the owners . . . other requirements were: that the doors shut off no light above the lintel when open, and, that the opening and closing action of the doors occupy no usable space either inside or outside of the door opening. The vertical roll-up action of rolling steel doors met these demands perfectly . . . and, in addition, their all-metal construction provided permanence, better protection against intrusion and fire, and assured the owners a lifetime of continuous trouble-free service. Rolling Steel Doors will meet your requirements better too. But, when you select a rolling steel door, know the facts—check and compare the specifications carefully . . . you will find that Mahon Rolling Steel Doors have built-in extra value features which you will want in the doors you buy. See Sweet's Files for complete information including specifications, or write for Catalog G-53.

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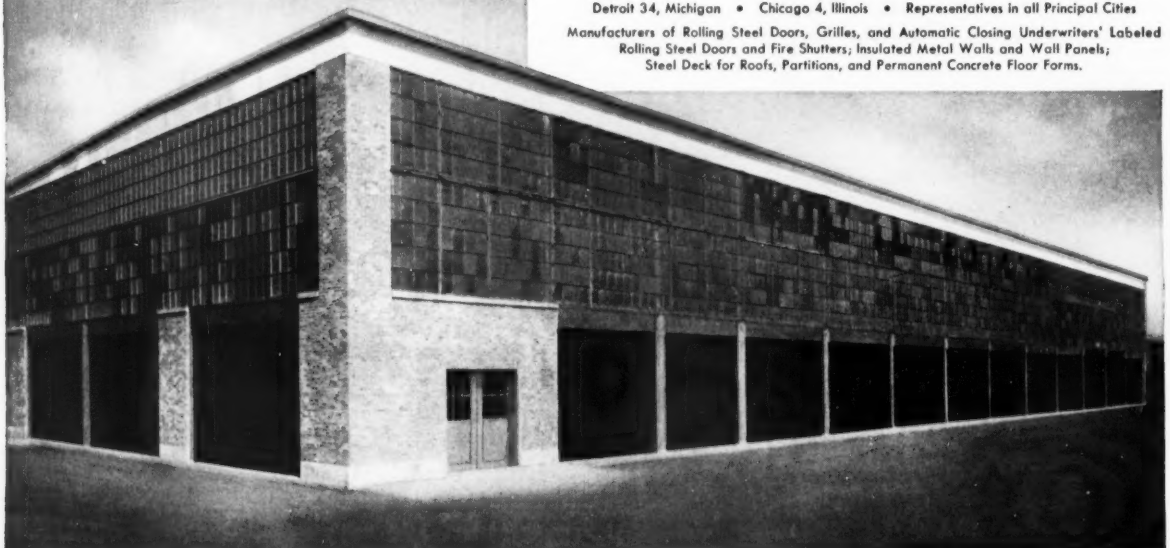


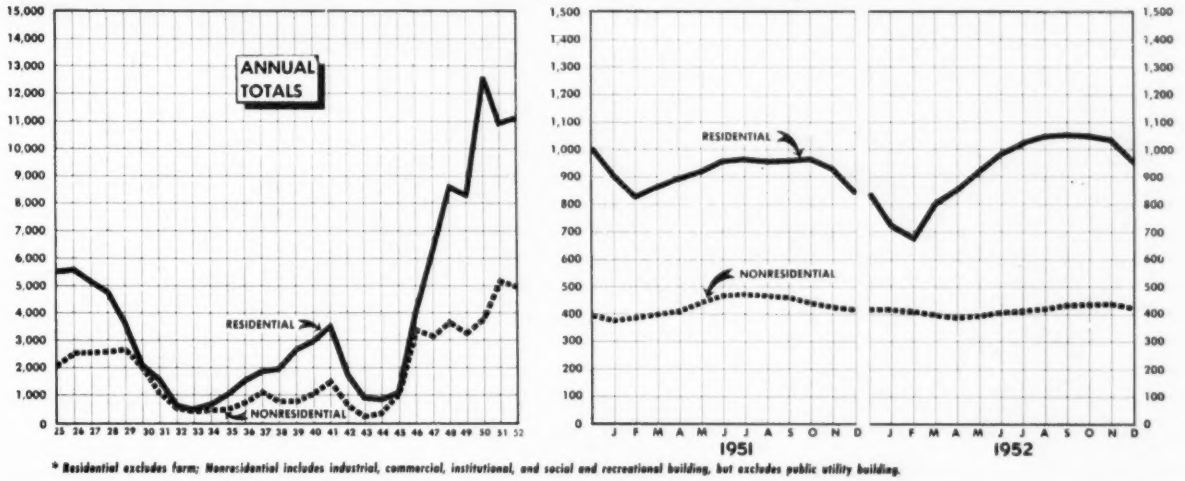
ROLLING STEEL DOORS, SHUTTERS AND GRILLES TO MEET EVERY REQUIREMENT

Fifteen Mahon Rolling Steel Doors installed in a new special purpose building recently constructed as an addition to a large midwest foundry.

MAHON

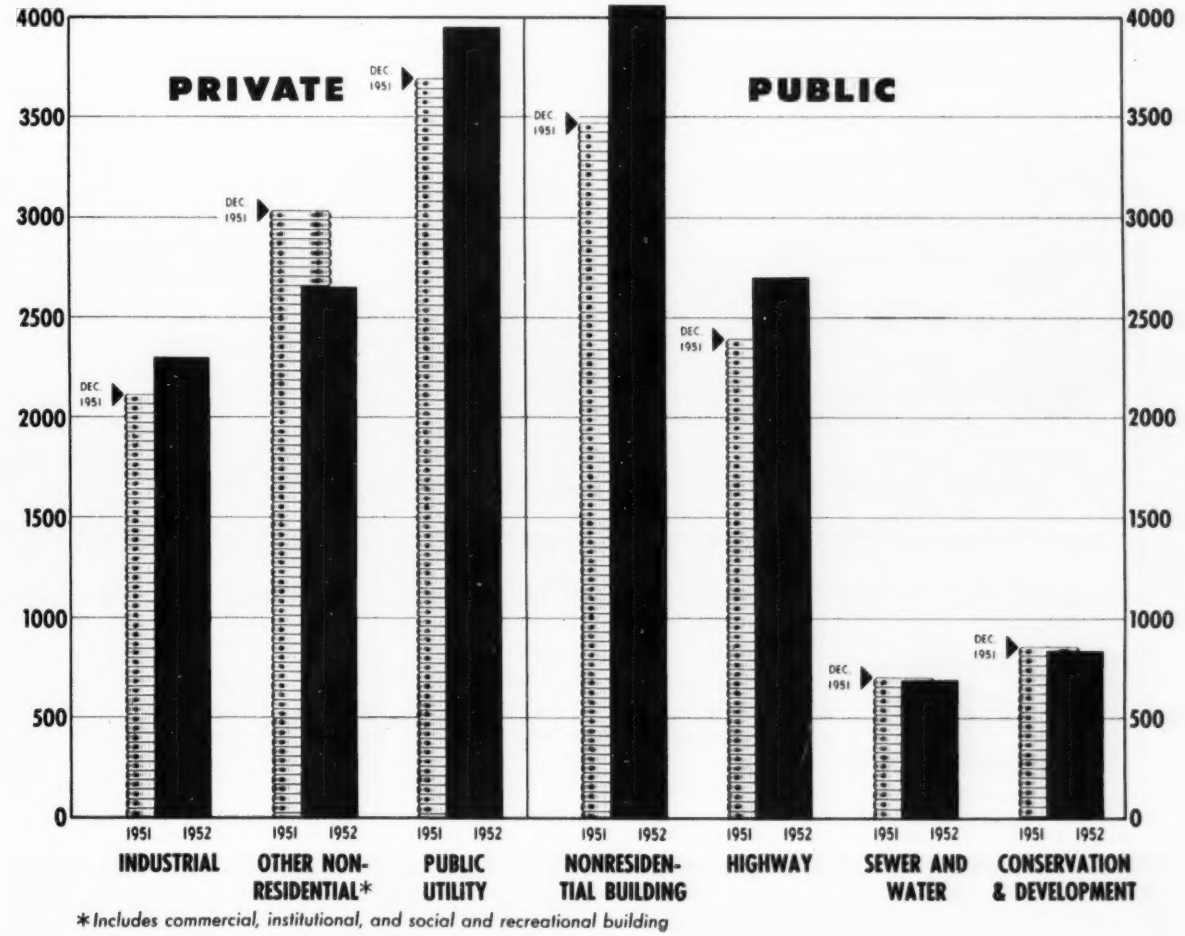
NEW CONSTRUCTION ACTIVITY

● Private Residential and Nonresidential Building * (MILLIONS OF DOLLARS)



* Residential excludes farm; Nonresidential includes industrial, commercial, institutional, and social and recreational building, but excludes public utility building.

● Selected Types: (CUMULATIVE, MILLIONS OF DOLLARS) 1951, 1952 VOLUME THROUGH DECEMBER



* Includes commercial, institutional, and social and recreational building

GENERALS

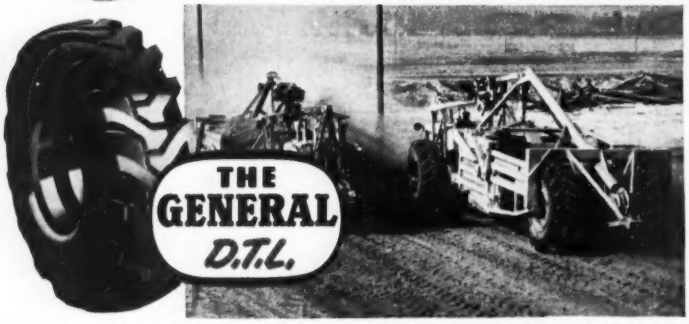
do any job, anywhere — FASTER! EASIER! AT LOWER COST!

GENERAL L. C. M.

For most work off the road, some on. Broad, deep lugs and thick, rugged shoulders prevent cuts, snags, bruises. More rayon cords, more rubber for extra carcass strength.

GENERAL H. C. T.

Designed for most work on the road, some off. Long-wearing safety tread and reinforced shoulder cleats give more traction, more original and recap miles.



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A GENERAL TIRE SERVICE

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SPECIFY GENERAL TIRES ON YOUR NEW EQUIPMENT

For Moderate Income Families in Large Cities

(Formerly referred to as the "Cost of Living Index," compiled by the Bureau of Labor Statistics)

THIS table indicates the average changes in retail prices of selected goods, rents and services bought by the average family of moderate income from September 15, 1950 to November 15, 1952.

They are presented here for use by employers who may wish to take these cost of living data into consideration when contemplating adjustments of wages based on increased living costs.

The Bureau of Labor Statistics surveys 10 key cities every month and 24 other large cities quarterly. Prices are obtained on food, fuel, apparel, house furnishings and miscellaneous goods and services. Rental information is obtained quarterly only for all cities. The computations are based on the indexes for the years 1935-39, which are taken as the average of 100 points.

	1950			1951			1952		
	SEPT. 15	OCT. 15	NOV. 15	SEPT. 15	OCT. 15	NOV. 15	SEPT. 15	OCT. 15	NOV. 15
Average	173.8	174.8	175.6	186.6	187.4	188.6	190.8	190.9	191.1
Birmingham, Ala.	179.7	179.1	180.3	191.4	196.0	196.3	196.6	196.7	196.1
Mobile, Ala.	172.9	.....	.....	185.6	.....	.....	189.4	.....	.....
Los Angeles, Calif.	169.5	171.3	173.2	187.2	187.9	189.6	192.2	191.9	192.4
San Francisco, Calif.	176.0	.....	.....	184.4	.....	.....	195.6	.....	.....
Denver, Colo.	.....	172.8	.....	.....	191.2	.....	.....	194.5	.....
Washington, D. C.	.....	.....	171.9	.....	.....	184.7	.....	.....	186.9
Jacksonville, Fla.	182.4	.....	.....	192.0	.....	.....	199.5	.....	.....
Atlanta, Ga.	.....	.....	178.9	.....	.....	196.1	.....	.....	198.6
Savannah, Ga.	.....	181.6	.....	.....	197.8	.....	.....	201.8	.....
Chicago, Ill.	179.8	180.4	180.6	191.8	193.5	194.3	195.9	195.9	196.0
Indianapolis, Ind.	.....	179.8	.....	.....	189.7	.....	.....	193.1	.....
New Orleans, La.	.....	.....	178.5	.....	.....	190.0	.....	.....	191.7
Portland, Me.	167.9	.....	.....	178.6	.....	.....	182.8	.....	.....
Baltimore, Md.	178.1	.....	.....	190.5	.....	.....	197.6	.....	.....
Boston, Mass.	168.2	169.4	169.6	177.8	179.3	180.0	182.2	182.5	181.5
Detroit, Mich.	175.4	177.7	179.2	189.0	190.2	191.5	193.6	195.0	194.6
Minneapolis, Minn.	173.2	.....	.....	183.1	.....	.....	190.1	.....	.....
Kansas City, Mo.	.....	167.4	.....	.....	180.4	.....	.....	185.5	.....
St. Louis, Mo.	175.0	.....	.....	186.2	.....	.....	192.7	.....	.....
Manchester, N. H.	.....	176.2	.....	.....	187.0	.....	.....	189.3	.....
Buffalo, N. Y.	.....	173.0	.....	.....	186.9	.....	.....	190.3	.....
New York, N. Y.	170.3	171.0	172.1	182.5	183.0	184.1	186.0	186.0	186.9
Cincinnati, Ohio	175.5	176.0	176.0	186.8	187.0	187.8	190.7	190.8	189.5
Cleveland, Ohio	.....	.....	178.6	.....	.....	192.0	.....	.....	193.6
Portland, Ore.	.....	183.4	.....	.....	195.8	.....	.....	199.2	.....
Philadelphia, Pa.	173.6	173.8	174.1	186.1	186.7	189.1	190.8	190.7	190.9
Pittsburgh, Pa.	177.7	179.2	178.9	190.0	191.2	192.0	192.5	192.8	193.0
Scranton, Pa.	.....	.....	173.7	.....	.....	185.4	.....	.....	187.9
Memphis, Tenn.	177.2	.....	.....	189.0	.....	.....	192.9	.....	.....
Houston, Tex.	179.8	179.9	181.1	194.1	194.4	195.1	195.6	196.6	196.4
Norfolk, Va.	.....	.....	177.0	.....	.....	191.7	.....	.....	194.5
Richmond, Va.	.....	171.6	.....	.....	183.8	.....	.....	186.4	.....
Seattle, Wash.	.....	.....	180.8	.....	.....	194.6	.....	.....	197.6
Milwaukee, Wis.	.....	.....	179.1	.....	.....	195.3	.....	.....	198.4

How Allis-Chalmers MOTOR SCRAPERS Help Cut Cost per Yard

Positive, forced ejection . . . eliminates wasteful circling or other time-consuming methods of removing the load. Allis-Chalmers' patented forced-ejection system plus high apron lift *bulldozes* dirt out of the bowl fast every trip . . . without extra wear and tear on power control unit cables and clutches.

Easy operation. From foam rubber seat to finger-tip control, shock-free hydraulic steering and full visibility, a TS-300 operator has every available help for safe, sure, speedy work. Balanced weight distribution and low center of gravity make A-C MOTOR SCRAPERS easy to maneuver even at top speed.

Faster, easier loading . . . because A-C MOTOR SCRAPERS have up to 20 hp. to handle every struck yard . . . plus offset cutting edges and "center-boiling" loading action that spills the dirt evenly, filling corner voids for full capacity loads.

High-speed hauling. The power behind the TS-300 teams up with big, traction-type tires that gear it to the road . . . move capacity loads at 22.5 mph. And operating clearance of 20 in. helps keep it from hanging up on rutted haul roads.

by Cutting Time per Yard

A dirt-moving "package" that makes every second count. The powerful HD-20 torque converter tractor is an ideal teammate for the TS-300. It synchronizes to scraper speed at contact . . . automatically loads at fastest speed conditions permit with less strain on operator and equipment . . . gives scraper an extra fast start to the fill.

Your nearby A-C dealer will be glad to give you more yardage-boosting facts about job-tested, *job-proved* MOTOR SCRAPERS. He can also tell you where you can see them at work and talk to the men who own and operate them. You owe it to yourself to call or stop in soon.

TS-300 MOTOR SCRAPER
14 cu. yd. struck capacity
18 cu. yd. heaped capacity
280 hp. Buda diesel or
275 hp. Cummins diesel

TS-200 MOTOR SCRAPER
10 cu. yd. struck capacity
13 cu. yd. heaped capacity
176 hp. Buda diesel or
165 hp. Cummins diesel

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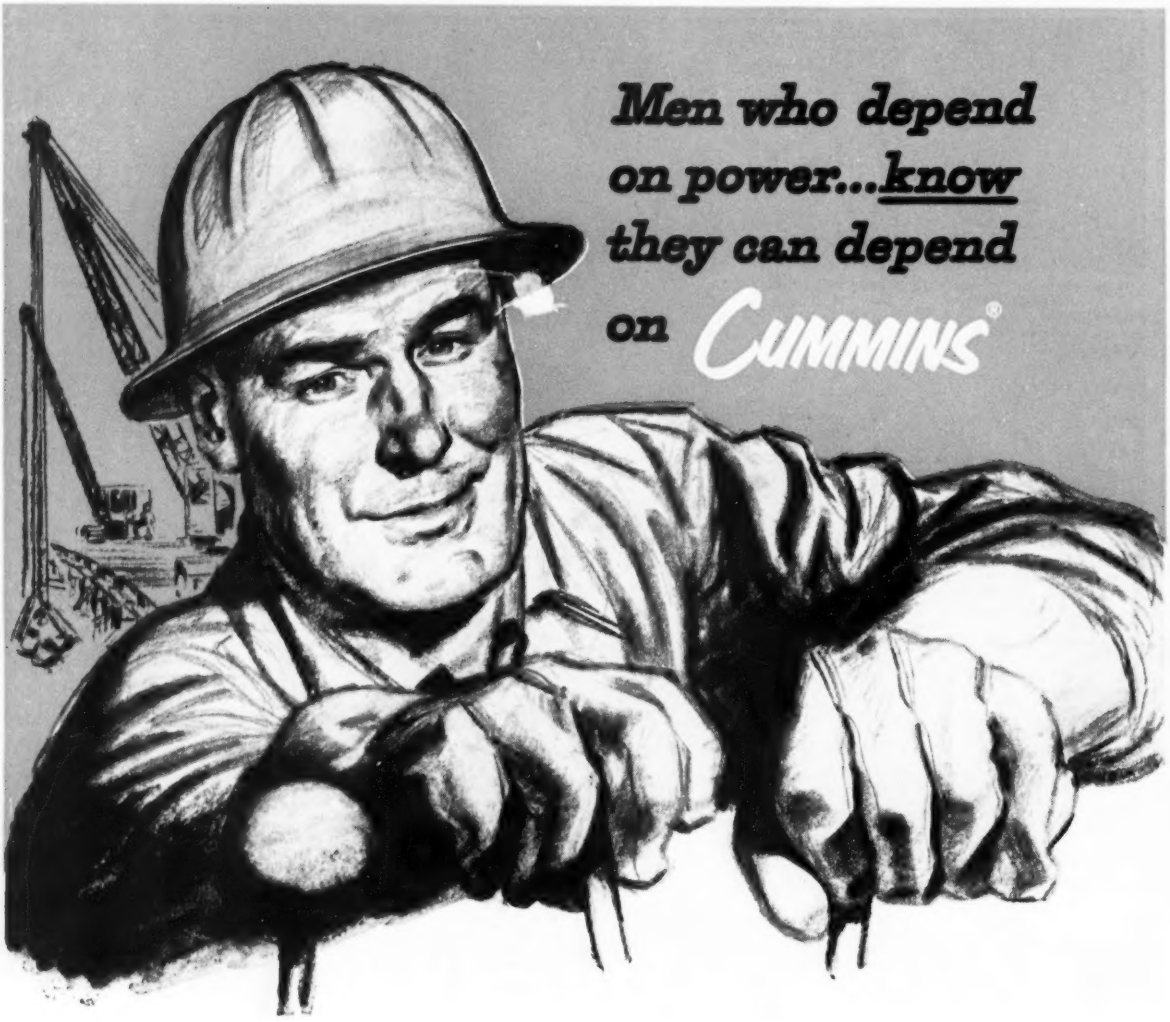
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

A-C THE FINEST LINE ON EARTH



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Progressive, eyes-ahead engineering is one of the big reasons why so many construction men pick Cummins Diesels for dependability.

Consider Cummins' exclusive system of fuel injection and metering—an important factor in the unequalled performance records established by lightweight, high-speed (60-600 h. p.) Cummins Diesels. No other Diesel fuel system is so simple . . . so rugged! It delivers a uniform, properly prepared fuel charge to every cylinder. All under low pressure—no chance of bursting and leaking fuel lines.

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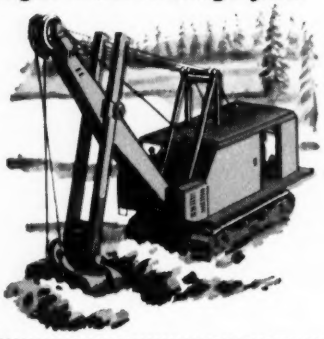

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Sidelights for Contractors

By John C. Hayes, *Counsel*

Taxes

Embezzled Funds.—In two cases involving the embezzlement of funds by employees over periods of several years prior to discovery, the Supreme Court has allowed tax deductions to the employers for the years the losses were discovered and their amounts ascertained. The court stated that whether and when a deductible loss results from an embezzlement is a factual question to be decided according to the surrounding circumstances.

Final Payment.—Where a subcontractor omitted from his 1942 income tax return 10% of the value of the work he had shown on his progress report as completed during the year, in accord with the amounts withheld from him by the contractor pending final completion and acceptance in 1943, the Tax Court held such omission as correct. The court was of the opinion that the 10% was not income in 1942 under either the cash or accrual method, since it was not actually or constructively received in that year and the subcontractor had no right to it until 1943.

Overceiling Payments.—Under the Emergency Price Control Act of 1942, which was effective in the main until 1947, the Bureau of Internal Revenue has indicated its acquiescence in the position taken by the courts that overceiling purchase payments are includible as part of the cost of goods sold, in computing taxable income. However, under the later and more stringent Defense Production Act of 1950, the bureau states that it will disregard as income tax deductions any payments made in violation of price or wage ceilings in the amounts determined by the Economic Stabilization Agency.

Excess Profits Tax.—The Tax Court has refused to grant Section 722 relief from excess profits taxes to a highway construction company that alleged its undertaking of large jobs in new and unfamiliar areas prior to the base years 1936-1939 impaired its capital and operations in the base period. The court concluded that the taxpayer's business had not in fact been depressed in the base years when its average earnings therein exceeded those in the 18-year period 1922-1939.

"Thin" Corporations.—In a recent case the Tax Court ruled that a corporation could deduct the interest paid by it on debentures which had been issued, together with its stock in a 3½-to-1 ratio of debentures to stock, in exchange for real estate which the corporation was to own and operate. The Treasury has now acquiesced in this decision that such a debt-to-equity ratio is not so top-heavy as to justify treating the debentures as additional capital of the corporation rather than indebtedness.

Tax Court Jurisdiction.—As stated by a Circuit Court, a taxpayer who thinks himself unfairly treated by the Commissioner may either (1) decline to pay the tax and seek relief from the Commissioner's determination by appealing to the Tax Court, or (2) pay the tax and sue to recover in a federal court. The remedies are mutually independent, and payment of the tax deficiency prior to appeal to the Tax Court deprives the latter of jurisdiction to hear the proceeding.

Tax Conferences.—The Bureau of Internal Revenue states, while lawyers and accountants may represent taxpayers before the bureau in the capacity of advocates only if properly enrolled and authorized to act with respect to the tax involved, that bureau representatives can accord recognition as witnesses to any unenrolled persons who have knowledge of facts pertinent to the case.

Business Split-Up. — The Commissioner has been rebuffed by the Tax Court in an effort to allocate to a corporation in the rock and sand business the income earned by a partnership formed by the principal stockholder to perform certain engineering and geological services for the corporation which had previously been done by the corporation's own personnel. The partnership operated as a separate entity and there were valid business reasons for its formation.

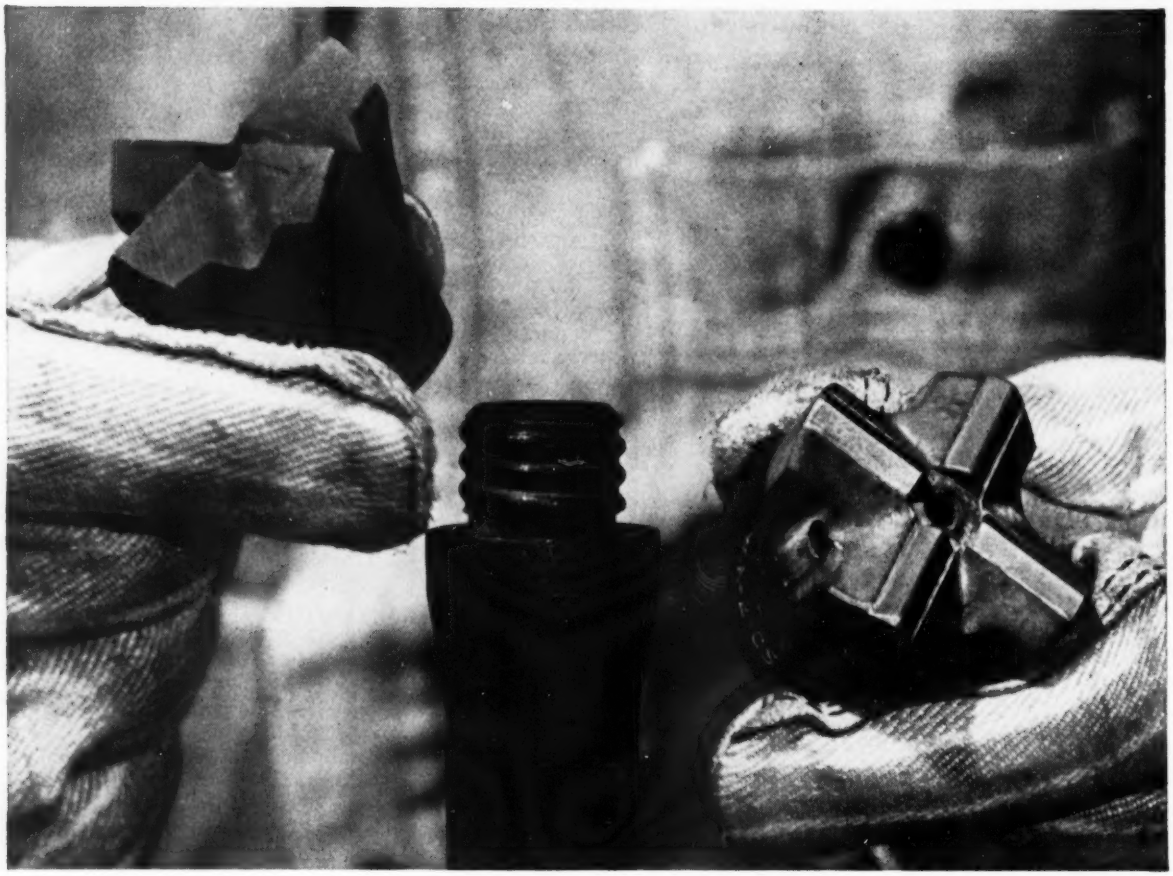
Public Contracts

Renegotiation. — The Renegotiation Board has issued a bulletin on book value and write-off facilities. Contractors desiring to place a value on their facilities employed in performing renegotiable contracts which exceeds their book value for accounting purposes, which will not be permitted to do so. But contractors using facilities subject to amortization under necessity certificates will not be regarded as high cost contractors merely because of the amount of amortization charged against renegotiable business. Where facilities are still in productive use although fully depreciated without special amortization, the contractor may be entitled to favorable consideration for efficiency in management if maximum defense production is obtained with facilities of advanced age.

Another Renegotiation Board bulletin covers costs allowances and disallowances. It states that the basic questions on allowability of any item of costs are (1) is it a good income tax deduction, and (2) is it allocable to renegotiable business? The rule to be applied in treatment of salaries and bonuses paid by contractors to officers and employees is said to turn principally upon what constitutes reasonable compensation.

Disputes Clause.—The Department of Defense Appropriation Act, 1953, approved July 10, 1952, provided in Section 635 that no funds under the act should be used for contracts unless the disputes clause therein permitted the contractor to appeal from a department decision to the Court of Claims. The Comptroller General has now ruled that this relaxing of the finality provision of the standard Defense Department contract applies only to construction contracts.

NO NEED TO SWITCH STEELS WHEN YOU NEED TO SWITCH BIT TYPES!



Both Timken® bit types fit the same steel!

YOU don't need to switch steels, or stock more than one kind, when you use Timken® interchangeable rock bits. Timken multi-use and carbide insert bits both fit the same threaded drill steel so that you can change quickly to the most economical bit as the ground changes. And you can do it right on the job!

In ordinary ground, when full increments of steel can be drilled, Timken multi-use bits, with correct and controlled reconditioning, will give you the lowest cost per foot of hole.

If you hit hard and abrasive ground, you can switch quickly to Timken carbide insert bits. They're your best bet for maximum speed drilling, constant-gage holes, small diameter blast holes and very deep holes.

Be sure to have both types of Timken bits on hand and you'll have the best answer to every one of your drilling problems.

Timken multi-use and carbide insert bits are interchangeable in each thread series. And both types have these three important advantages: (1) made from electric furnace Timken fine alloy steel, (2) threads are not subject to drilling impact because of the special shoulder union developed by the Timken Company, (3) quickly and easily changed.

Timken rock bit engineers have 20 years' experience in solving drilling problems. Let them help you select the best bits for *your* job. Write The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

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your best bet for the best bit
. . . for <u>every</u> job

Construction Future Encouraging

The immediate, and long-range, prospects for the construction industry are encouraging.

During 1952 the industry is estimated to have put in place in the continental United States a record of $32.3 billion in new construction and a total of $42.3 billion including maintenance and repair operations.

Estimates compiled from various sources by The Associated General Contractors of America (Page 21) indicate the potential of another record of $33.5 billion in new construction this year and a total of nearly $44 billion when maintenance and repair operations are added.

The longer range outlook for all business, including construction, have been studied in the publication, *Markets After the Defense Expansion,* issued at the year-end by the Department of Commerce. Prepared by many leading economists working with the Department and the Committee for Economic Development, this study finds many strong factors for continued economic growth in the nation after the peak of defense spending has been reached. It stated in part:

"The prospective rise in defense expenditures, the continued strength of fixed investment demand, and the current satisfactory inventory position of business point toward the strong possibility, though of course no certainty, of another year of good business in 1953.

"A downturn in 1954 is a real possibility, but the case for it seems not greatly stronger than that which can usually be made this far in advance of any date.

"The projected decline in defense spending in 1955 would provide a serious test of the strength of the economy. Particularly is this so since the reduction would be almost entirely in government purchases from the durable goods and construction industries, which may also be experiencing slackening demand in the private investment field unless that adjustment is completed earlier. Thus, 1955 appears to be a year in which it will be of major importance sizably to expand private markets to maintain a high level of business activity."

There are strong growth forces which indicate that there can be an increase in private markets when defense spending slackens, and these factors are analyzed in the 90-page document.

Other encouragement for the construction industry is found in the book, *Stabilizing Construction: the Record and Potential,* written by Miles Colean and Robinson Newcomb and issued last month by the CED. (Page 24)

They challenge the theory that a serious postwar decline is inevitable, and their study indicates that with public and private development of economic policies such as those advanced by CED, construction volume can remain at high levels through the foreseeable future.

All of these studies of the future potential of all business and the construction industry are based on certain assumptions of international complications and domestic policies and clearly recognize the fallibility of human judgment and the shortcomings of the powers of prophecy. But they do indicate that there are sound factors operating toward a continued high level of business activity.

Among the favorable factors for the construction industry are that while there have been record volumes of new construction in recent years, the backlog of needed construction of many types is likewise at an all-time high.

Educational construction for many years has lagged behind growth of the school population. The Commerce study found that social and recreational construction has been neglected for many years. Highway needs are tremendous, as are many others for water development and clean streams. While industrial construction has been at very high levels in recent years, substantial expenditures for plant and equipment are still contemplated by business for future years.

While it remains to be seen whether or not potentials develop into actualities, there are many strong factors which point to a continued high level of construction activity in the future.

Contract Renegotiation

A guide for the renegotiation of construction and architect-engineer contracts has been specially prepared by the Renegotiation Board and issued in Renegotiation Staff Bulletin No. 12.

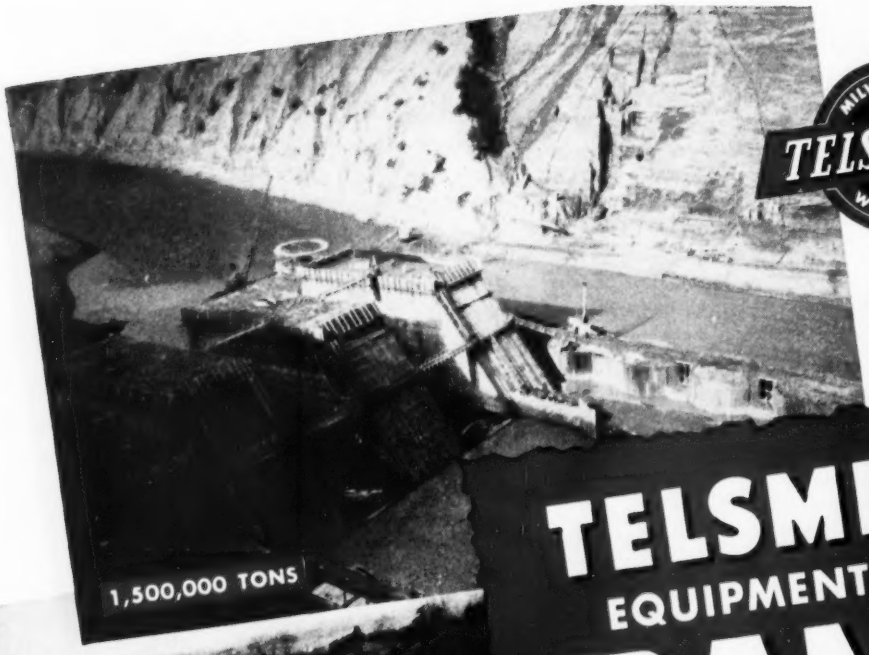
The purpose of the guide is to "orient renegotiation personnel and others concerned to the problems of renegotiating construction and architect-engineer contracts and subcontracts."

In pointing out the distinction between construction and procurement or supply contracts, the board stated: "The regulations and forms used in renegotiation have been prepared within the framework of the act for general use among contractors, the majority of which are suppliers of military goods and other materials, as distinguished from construction contractors. For that reason, the language of the regulations and the forms is sometimes in terms not directly applicable to the construction industry.

"To assure a uniform and equitable result in the renegotiation of construction contractors, the differences which distinguish construction contracts from supply contracts must be plainly recognized."

The 42-page staff bulletin outlines in considerable detail the many factors which should be taken into consideration in the renegotiation of construction contracts. It was prepared by men from defense agencies intimately familiar with the industry. Suggestions from The Associated General Contractors of America were included.

The bulletin gives evidence that the Renegotiation Board has sought to adopt procedures to lead to the fair and equitable renegotiation of construction contracts.



Mount Morris Dam, N. Y. The 300-350 tons per hour rock crushing Plant was Telsmith designed and equipped.

MILWAUKEE TELSMITH WIS. U. S. A.

TELSMITH EQUIPMENT FOR DAMS

Philpott Dam, Va. Here, too, the crushing-screening equipment was Telsmith.

● Huge dam projects and Telsmith Aggregate Plants go together. Many dam builders call in Telsmith engineers for consultation as to the proper plant layout and the right equipment to use. Then Telsmith makes the detailed drawings for the erection of the plant and furnishes most of the machinery. Telsmith designed plants have proven their efficiency on many large projects and Telsmith equipment has a world-wide reputation for the production of low-cost aggregate. The ruggedness of Telsmith equipment is strikingly demonstrated by long life in severest service, on successive projects. After producing 1,500,000 tons of aggregate at Center Hill Dam, the same Telsmith equipment turned out about the same amount of aggregate at Buggs Island Dam.

Save time and money. Consult Telsmith Engineers.

Ask for Bulletin 266.

MP-8

OTHER DAMS BUILT WITH TELSMITH EQUIPMENT

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Buggs Island Dam, Virginia
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Cascade Dam, Washington
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Davis Dam, Nevada
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$44 Billion in 1953 Construction Held Possible After 1952 Record

- Industry Continues as Largest for Third Year
- Responsible for Employment of Nearly 7½ Million

By William G. Dooly, Jr., *News Editor*

» ANOTHER NEW PEAK in the total volume of construction activity—possibly reaching $44 billion in the United States—is probable in 1953, and an additional $1 billion is expected to be invested in overseas construction by the federal government, The Associated General Contractors of America announced this month.

At the same time the A.G.C. estimated an all time record of $42.3 billion in total construction was put in place in the United States during 1952, representing more than 12 per cent of the nation's estimated gross national product, and employing directly or indirectly about 7½ million persons. In addition, the federal government invested more than ¾ of a billion dollars in new construction outside the continental United States last year, most of which went into bases for the armed forces.

The 1952 total of $42.3 billion within the U. S. consisted of about $32.3 billion in new construction and approximately $10 billion in maintenance and repair of existing structures. About $33.5 billion of the 1953 estimate would be new construction.

The 1953 figure is predicated on the anticipated continued high level of materials output and easing of the supply of construction machinery and parts, assumptions of lessening interference by controls and relatively stable costs, and no major work stoppages or international complications.

The association, which represents more than 6,200 leading general contracting firms of all types throughout the United States and Alaska, who perform the majority of the nation's contract construction at home and abroad, based its year-end review and forecast on a study of authoritative private and governmental sources.

General 1953 Outlook

In contrast to the pattern of "spotty" construction activity that characterized the past three years under federal construction controls and shortages, 1953 volume, for the most part, is expected to show general increases throughout the country and should result as much from a rise in civilian projects as from the anticipated peak to be reached this year in defense construction.

Abnormal activity is expected in a few states due principally to large outlays in atomic energy and toll road facilities—particularly the atomic energy and toll road programs in Ohio and the New York State Thruway.

In the private category, estimated at more than $22 billion, a tapering off of the current industrial expansion peak should be more than offset by a spurt of at least 25 per cent in commercial structures and moderate increases in public utility—led by the booming gas and electric light and power group—residential, church, educational and social and recreational construction.

Public construction as a whole will also rise to more than $11 billion, underpinned by increases in military, naval, atomic energy, school, highway, sewer and water and other types of construction, with decreases expected only in public housing and hospital building.

Nation's Largest Industry

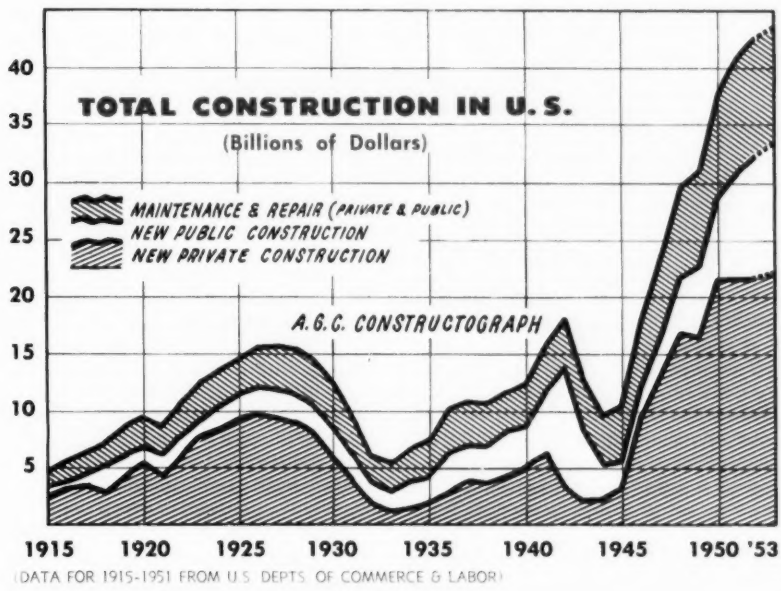
Construction continued for the third successive year its new-found role as the nation's greatest production activity, surpassing traditionally top-ranking agriculture's 1952 estimated gross income of $37.6 billion by more than 12½ per cent.

Based on an estimated gross national product of around $343 billion in 1952, nearly one out of every eight dollars spent for end products and services was spent for construction.*

Construction was the nation's largest contributor to gainful employment among the production industries, being responsible for the employment directly or indirectly of nearly 7½ million persons, or about 14 per cent of all full-time equivalent employees. Direct construction employment is estimated at about 3.4 million, and for every 5 workers employed at the site of construction, 6 may be employed in activities servicing it.

History demonstrates that the country has never had general peacetime prosperity for more than a brief period without a high construction rate, and private studies have indicated that if the American economy continues to expand and there is no major international complication, total construction volume will reach $50 billion annually by 1960.

While construction has been held down appreciably in civilian categories since the start of the Korean



(DATA FOR 1915-1951 FROM U.S. DEPTS. OF COMMERCE & LABOR)

war, the industry "should feel gratified regarding its discharge of such a dynamic role in vitalizing the mobilization program while at the same time meeting such essential civilian demand as was possible under federal controls and within the capacity of materials production," H. E. Foreman, A.G.C. managing director, pointed out.

"Construction generally should continue at a high level for years to come if a reasonably healthy economic climate is maintained. Steady population growth should call for a good residential volume; rising commercial and utility expansion already is lagging considerably behind new community growth; rapid technological advances will tend to bolster industrial construction; and public pressure is mounting for needed public works in such facilities as schools, highways, hospitals and sewer and water works. These, in large measure, should fill the gap as defense construction tapers off."

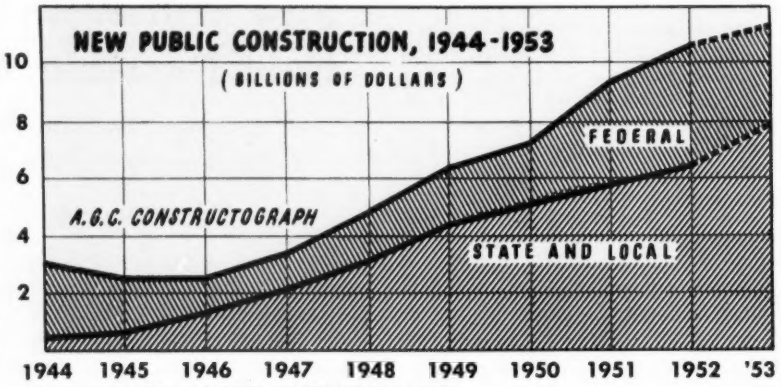
In addition to the continuing increase of private construction as a barometer of prosperity, the steadily rising volume of state and local public works as the dominant factor in total public construction is indicative of generally healthy economic conditions in states, counties and municipalities. Recognition of the need for further increases in this category was shown in the November elections when a record $1.3 billion in bond issues was voted and other measures adopted throughout the country to increase construction, principally highways and bridges and schools.

1952 Record, by Major Types

New peaks were registered in 1952 in construction of private industrial, school and public utility facilities.

Industrial expansion reached an all-time record of $2.3 billion under influences of the mobilization program and ever-increasing demand for civilian products.

Public utilities, experiencing their ninth successive year of increasing construction expenditures, invested more than $3.9 billion. Although gas pipeline construction declined as a result of shortages, the petroleum industry experienced an unprecedented year of activity in its effort to speed oil to refineries, constructing a record of about 10,000 miles of crude oil and petroleum products pipelines, doubling its previous record of 5,000 miles in 1950.



(1944-51 DATA FROM U.S. DEPTS. OF COMMERCE & LABOR)

Private educational construction totaled about $350 million.

Although not reaching the 1950 peak, residential construction at $11 billion passed the 1,000,000 mark in the number of units started for the fourth year in succession, estimated at between 1.1 and 1.2 million, of which about 150,000 units were in apartment construction. An unseasonally large number of units was placed under construction this fall.

Declines were noted from 1951 levels in commercial, hospital, church, and farm construction.

In the public categories, military and naval, and industrial construction (mostly atomic energy plants), reached their highest peaks since wartime 1943, at $1.4 billion and $1.6 billion, respectively.

Public school construction also reached a new dollar peak at $1.6 billion, with more than 47,000 elementary and secondary classrooms estimated to have been built.

The fourth major public category to establish a record in 1952 was highways, valued at more than $2.7 billion, rising steeply under the influence of toll roads as well as other construction, from a virtual all-time low in 1944.

Public hospital and institutional building declined with the tapering off of the veterans' hospital program, and public housing reached the highest dollar volume since its wartime peak of 1943.

Outside the continental United States the Army, Navy and Air Force put in place an estimated $750 million in facilities, and the federal government spent an estimated $100 million on other public works including such items as highways, housing and railroads in the territories and foreign service buildings.

Biggest items in the estimated $10 billion of maintenance and repairs in 1952 were, in order of importance: residential, nonresidential building, highways, railroads.

1953 Outlook by Types

Residential—Expected to increase slightly in expenditure to $11.5 billion principally because the year started with more houses already under way, with 1953 starts again due to pass the 1,000,000 mark under relaxed credit conditions. Public housing is due to decrease.

Private Industrial—Having apparently reached its peak in 1952 at $2.3 billion, is expected to decrease as much as 25 per cent, although business has indicated continuing high capital investment plans for the first quarter of 1953.

Commercial—Construction of warehouses, office and loft buildings, stores, restaurants and garages is expected to spurt at least 25 per cent from 1952, influenced by relaxations in controls of materials and credit, to about $1.4 billion.

Farm—Expected to maintain its current level at $1.7 billion.

Public Utilities—Due to rise for tenth successive year by more than 10 per cent to about $4.4 billion, led by the gas and electric light and power group which has an extensive backlog of needed construction. Gas pipelines are scheduled for a big increase to a new peak toward a goal of 7,200 miles of large pipe laid, and crude oil and petroleum products lines are expected to total more than the 10,000 miles laid in 1952.

Other Private—Construction of churches and educational facilities is expected to increase slightly, hospital and institutional to lag, and social and recreational to rise by 20 per cent.

Military, Naval and Atomic Energy—Military and naval construction, just getting into full swing in the current program, is expected to increase nearly 20 per cent to some $1.6 billion, and public industrial work, spurred by great scheduled increases in atomic energy facilities, should reach about $1.7 billion. Both categories would be highest since wartime 1943.

Public Educational—The highest number of elementary and secondary classrooms in history should be built this year, estimated at more than 59,000, with total educational construction costing perhaps $1.8 billion.

Highways—Booming toll road construction, plus urban expressways and other highway work, are expected to reach at least $3 billion—largely state and local work.

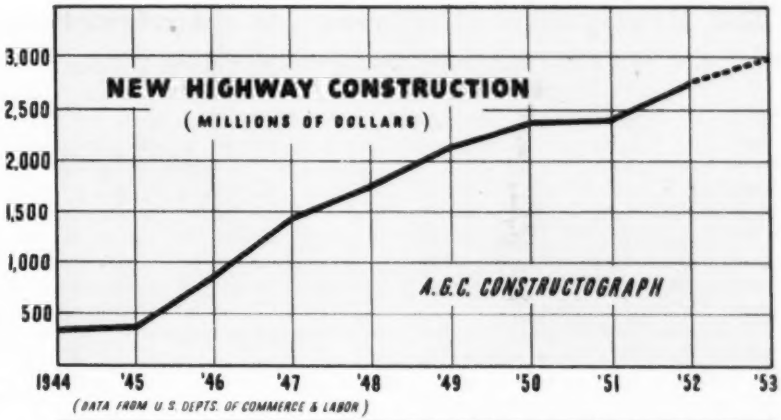
Other Public—Sewer and water projects are expected to recover, reaching about ¾ of a billion dollars; and conservation and development work is expected to approach $875 million.

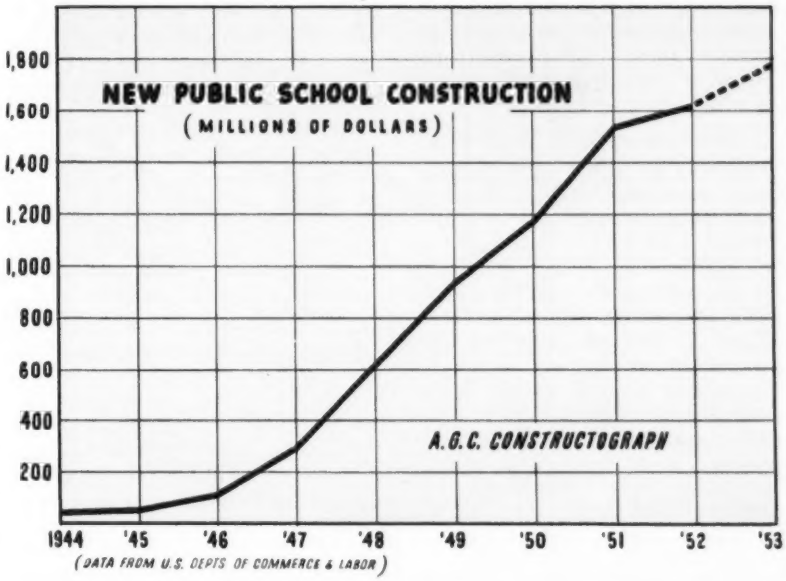
Unprecedented Demand Seen

At no time in the past has the construction industry been faced with such a tremendous demand for construction of all types. This is the result of a combination of factors, including the delay of needed civilian facilities caused successively by the depression of the 'thirties, World War II and ensuing controls, and the current mobilization program with its controls and taxation policies which deter investment commitments in construction. All the while, the need was aggravated by the growth of population and its compounded requirements.

Government officials have estimated the backlog of known planned construction projects in the neighborhood of $68 billion.

Expressed in terms of need, the requirements run into astronomical figures. For example, the American Association of State Highway Officials last year estimated that some $32 billion of highway construction was needed to modernize the highways. Other estimates place total highway needs near $50 billion. The U. S. Office of Education reports a nationwide shortage of 325,280 classrooms for over 9 million school children as of 1952, requiring expenditures of nearly $11 billion, compared with the current volume of 47,000 classrooms last year. The need for sewer and water projects to offset tremendous growths in population and industry is enormous, according to the U. S. Public Health Service, while construction lags at less than $1 billion per year.





The average annual volume of commercial building during the postwar years is 30 per cent below that of the boom decade of the 1920's in terms of percentage of private building, and apartment construction is lagging even farther below that period. The reduction in commercial facilities has been attributed to unfavorable investment factors in the form of credit, construction and rent controls, taxation policies and some caution inherited from the disaster of the depression. The capital is available, and given proper economic climate, could result in an expansion in these types in the future.

Competent studies indicate that the industry is not subject to natural cycles of depression-precipitating declines, but fluctuates less than some other major segments of the economy, and that construction investment hinges on confidence of citizens in the future of the United States.

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* A completely accurate relation of total construction output to gross national product is impractical because of the manner in which the product data are grouped, and the apparent difficulty of separating expenditures for maintenance and repairs from costs of operations.

Sources include: U. S. Departments of Agriculture, Commerce, Defense, Interior, Labor; Defense Production Administration; National Production Authority; Housing & Home Finance Agency; Office of Education; U. S. Public Health Service; Petroleum Administration for Defense; Panama Canal; Security & Exchange Commission; American Gas Association; American Association of State Highway Officials; Committee for Economic Development; U. S. Chamber of Commerce, President's Materials Policy Commission report; various postwar Congressional committee reports.

CED Study Hits Theories on Construction

- Proper Economic Policies Would Bolster Volume Outlook

» THE COMMITTEE for Economic Development last month issued a comprehensive research study of construction and its relation to the economy which should prove a boon in many respects in helping to puncture theories which have led to use of the industry as a "whipping boy" in economic planning.

Stabilizing Construction: The Record and Potential, a book authored by Miles Colean and Robinson Newcomb and published by the McGraw-Hill Book Co., is the 15th book-length research completed by independent authorities since CED started this method of analyzing national issues 10 years ago.

Challenges Many Theories

The findings in the study challenge many widespread beliefs about the industry, and suggest that:

- There is no 18 to 20-year cycle of "depression-precipitating" declines in the industry, and the industry is more victim than villain to economic fluctuations. It fluctuates less than some other major industries.
- A serious postwar decline is not inevitable, but on the contrary, "with public and private development of economic policies such as those advanced by CED," construction can remain at high levels "through the foreseeable future" without threat of a collapse like that of 1932.
- "Restrictive practices" by employers, workers and government have not given the intended beneficiaries real protection against shifts in demand, supply, prices, wages and employment, but "with some temporary exceptions" have prevented the industry's growth to its proper potential.

The authors claim that public works can be counted on as a quick and effective means of offsetting drastic declines in the construction industry and the economy as a whole, in the absence of greater long-term planning, budgeting and coordination of federal, state and local programs. They offer recommendations for "timing" public works programs.

The book, supported by a large appendix of tables from most of the authoritative federal statistical agencies concerning construction, goes deeply into the character of the industry, the complexity of construction and products used therein, organization of the industry, costs and employment, restrictive practices of specialty contractors and labor, government controls and their effects, and the various aspects of demand.

Particular studies are included of the various types of construction and their relation to the whole.

"One of Most Important" Books

While the book does not necessarily represent the views of those associated with CED, the committee considers it one of the most important ever published in the field. The authors expressed their own views freely.

Mr. Colean is a Washington consulting economist widely associated with construction statistics and Mr. Newcomb, now on the staff of the Office of Defense Mobilization, formerly was on the staff of the President's Council of Economic Advisers.

The book is priced at $6.00.

Renegotiation Guide Issued

Renegotiation Staff Bulletin No. 12, titled, "Guide for Renegotiation of Construction and Architect-Engineer Contracts," was issued Dec. 24 by the Renegotiation Board. It was prepared by a group of construction and engineering experts from defense agencies working with the board's staff, and its main purpose is to indoctrinate renegotiation personnel in the special problems which will be encountered in such contracts.

The bulletin points out that the regulations and forms used in renegotiation were prepared for general use among contractors, the majority of which are suppliers of military goods and other materials. "For that reason, the language of the regulations and forms is sometimes in terms not directly applicable to the construction industry. To assure a uniform and equitable result in the renegotiation of construction contracts, the differences which distinguish construction from supply contracts must be plainly recognized."

An article interpreting the new guide for construction contracts by John C. Hayes, counsel, will appear in the February issue of THE CONSTRUCTOR.

BCI Complaints a Rarity

Good relations continue to prevail between the construction industry and corporate suretyship, as evidenced by the fact that complaints to the Bureau of Contract Information, Inc., either by owners, suppliers or contractors have been exceedingly rare in recent years, W. D. Dean, general manager of the BCI, declared at the annual meeting of that organization last month in New York.

Evidently claim adjustments are being conducted with a degree of fairness and dispatch that meets with general approval, Mr. Dean said, pointing out that relations between the industry as a whole and surety management are influenced largely by the manner in which claims are adjusted.

The Bureau of Contract Information, with headquarters in Washington, D. C., is a national clearing house for information concerning the performance and business standing of construction contractors.

No Support Legislation

In his annual report, Mr. Dean said that while construction had overtaken agriculture as the nation's leading industry, unlike agriculture, construction has no "support" legislation to keep prices up.

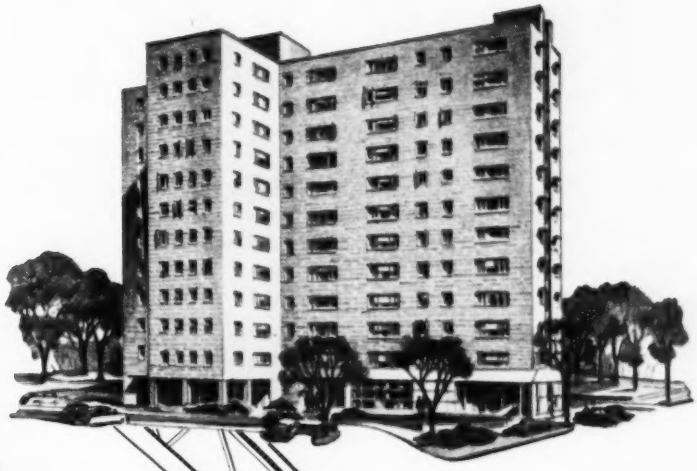
"On the contrary, when the contracting business is good, many new enterprises are attracted to it and the type of competition offered by some of them eventually tends to exert a depressing influence on prices," he declared. "This is particularly the case in the field of small and medium-sized projects where new firms are usually most active."

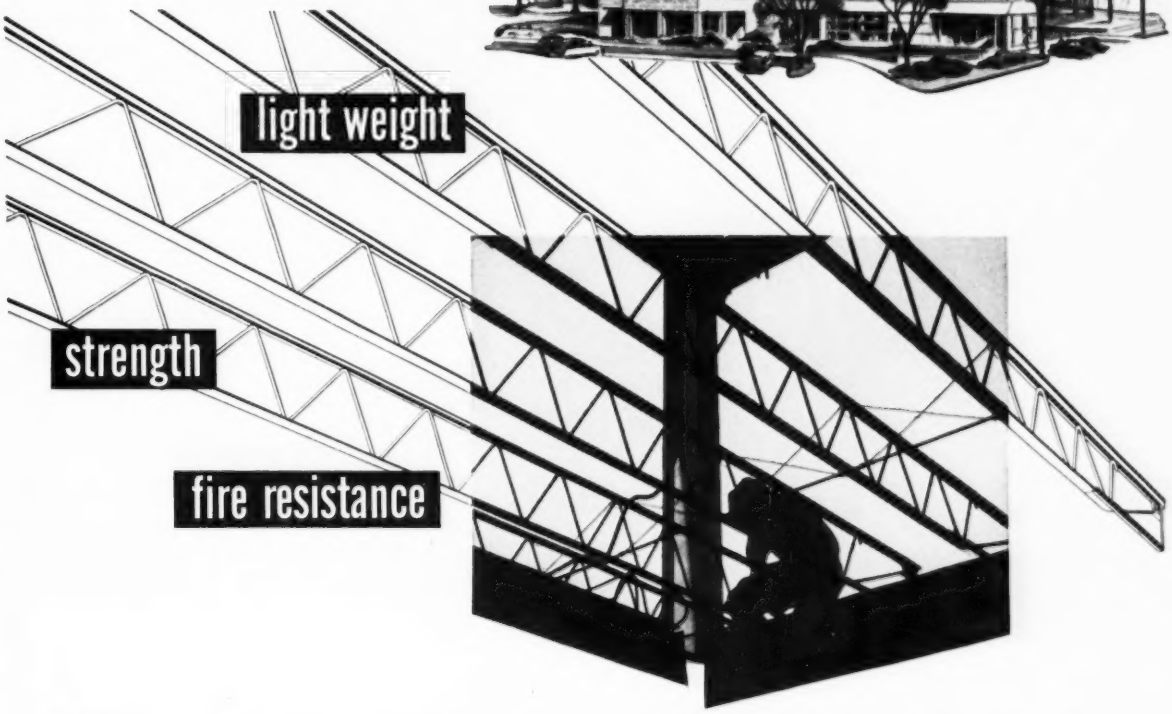
Markets Still Holding Up

Regarding contract bond prospects, the BCI general manager said that whatever the future has in store for contractors will, of course, infallibly apply in equal measure to suretyship. He declared, however, that the great potential market of the past several years gives no signs of running down.

National officers of BCI, whose reelection for 1953 was announced, are: President, John C. Brodsky, vice-president of the Fidelity and Casualty Co. of New York; vice president, William H. Wallace, vice president of Hartford Accident and Indemnity Co.; and secretary-treasurer, Donald A. Gillum, assistant secretary, New Amsterdam Casualty Co.

TRUSCON "O-T" STEEL JOISTS ASSURE...





Hundreds of structures such as the Highland Tower Apartments in Birmingham, Alabama, indicate the trend toward lower cost per square foot construction while assuring adequate strength and safety with Truscon "O-T" Steel Joists.

Light Weight. The light weight of Truscon "O-T" Steel Joist construction lessens the time and labor required for erection and also saves materials in the supporting framework and foundations. Every detail of joists and attachments has been perfected by practical experience to simplify installation and assure dependable results.

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See SWEET'S for complete specifications on Truscon "O-T" Open Truss Steel Joists. Write for illustrated literature describing the entire line of Truscon Steel Building Products.

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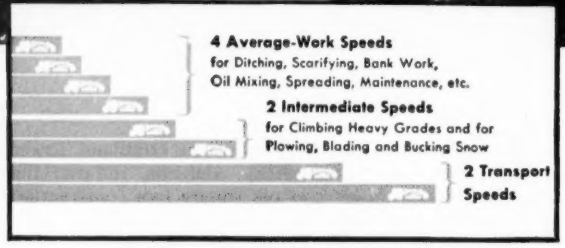

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Increased Allotments of Steel Follow Relaxation of Controls

- Expect Complete Steel Decontrol Next Quarter
- NPA Hints Standby Rules Being Developed

» THE WIDEST relaxation of construction controls since their advent in October 1950 went into effect this month as increasing evidence of decontrol plans appeared. It was made clear by the National Production Authority, however, that the final decision on controls is being saved for the new Administration.

There were these developments:

• On Dec. 10, NPA announced, effective Jan. 1, increases in the amounts of steel and copper that may be self-authorized for commercial and most other construction and lifting of the ban on recreational, amusement and entertainment projects.

Advancement of the effective date of these relaxations from May 1 was "in accord with the recommendation of a task force group of the construction industry's industry advisory committee made at a meeting with NPA on Oct. 29," the agency said.

• On Dec. 18, the Defense Production Administration announced allotments of steel, copper and aluminum for defense, industrial and construction uses in the second quarter of 1953. Based on an expected 1,000,000-ton increase in supply over the third quarter of last year, large increases in carbon steel allotments were made for highways, and materials provided to support housing at the rate of 1,000,000 units per year. "Adequate" provision was made for power expansion, atomic energy and defense construction, and schools and hospitals.

• A breakdown of the second quarter structural steel allotments, announced Dec. 31, reveals they will be the largest distribution of structural steel made under the Controlled Materials Plan, but will be subject to a "substantial carryover" of undelivered authorized orders resulting from the steel strike. In addition to strong support of defense, atomic energy, electric power and petroleum programs, an allotment to the Bureau of Public Roads to permit "the highest rate of highway construction ever experienced in the United States" was announced at 185,000 tons, compared with 115,621 tons in the first quarter.

A special reserve of 210,939 tons of structural steel was set aside to cover self-authorization requirements under the newly relaxed construction controls. DPA said the apparent reduction in some programs "is more than offset by this self-authorization so that many programs will receive materials at or above the third quarter 1952 levels." Self-authorization privileges are expected to benefit many new small schools and hospitals.

• In a year-end statement, NPA said the final decontrol plan undoubtedly will assure the flow of materials to essential defense programs without dislocating industry and the national economy, and hinted that a plan is being developed for a standby control system for use in the event of all-out mobilization.

New Construction Relaxations

The easing of construction curbs that went into effect this month had previously been scheduled and rescheduled for several different dates, the last having been May 1.

Aluminum curbs will not be eased until May 1, however, because of production losses at aluminum plants in the Pacific Northwest and Tennessee Valley due to lack of hydroelectric power.

According to an NPA official, the delay in relaxing the aluminum curb will not have much effect on construction. He said builders can buy most of the aluminum they need in the form of "B products" such as weatherstripping and storm windows for which no allotments are required.

The NPA said its action represented the most significant relaxation of construction controls since they were originally imposed in the fall of 1950. At that time an outright ban was placed on the construction of such amusement and entertainment projects as theaters, swimming pools, amusement parks, and country clubs.

Recreation Projects Allowed

NPA's relaxation order now permits builders of such projects to self-authorize orders for up to 5 tons of carbon steel (not to include more than 2 tons of structural shapes), 500 pounds of copper-base alloys and 300 pounds of aluminum per project per quarter.

The new order permits self-authorization on other types of construction as follows:

Highways—per project: 25 tons of carbon steel (not to include more than 12 tons of structural) and the same amounts of copper and aluminum now permitted—500 pounds each. Previous steel limit was 25 tons, not to include more than 2 tons of structural.

One-through-4-family houses—per dwelling unit: 1,500 pounds of structural steel in addition to materials now permitted. At present, 275 pounds of aluminum, 200 pounds of copper and 2,300 pounds of carbon steel are permitted for homes with steel pipe water distribution systems, and 275 pounds of aluminum, 400 pounds of copper and 1,950 pounds of carbon steel for homes with copper pipe distribution systems. The present extra copper allowances for forced hot water heating and radiant heating are continued unchanged.

Multi-unit residences (walk-ups)—per dwelling unit: 2 tons of carbon steel (not to include more than 500 pounds of structural), 200 pounds of copper and 275 pounds of aluminum. Previously, no self-authorization for this type of construction was permitted.

Multi-unit residences (elevator types)—per dwelling unit: 3 tons of carbon steel (not to include more than 600 pounds of structural), 225 pounds of copper and 275 pounds of aluminimum. No self-authorization for this category was formerly allowed.

All other construction—per project per quarter: 25 tons of carbon and alloy steel, including structural (not to include more than 2½ tons of alloy and no stainless), 5,000 pounds of copper and 4,000 pounds of aluminum.

Distinction Eliminated

Effective Jan. 1, said NPA, the present distinction between "industrial" and "all other" construction would be eliminated and the same self-certification quantities allowed for both. The amounts permitted are the same as those now allowed for indus-

trial except that 1 ton of stainless steel per project per quarter is permitted for chemical plants.

NPA also said that beginning Jan. 1 the dollar limit on DO rating authority for the purchase of non-controlled building equipment and production machinery would be raised to $15,000 on building equipment and $5,000 on production machinery for recreational construction; $100,000 on building equipment and $200,000 on production machinery for all other construction, with no limit on building equipment for residential building. The prohibition on self-authorization for wide-flange beams and sections for all categories of construction will be removed.

In May, 1952, at a meeting of its Construction Industry Advisory Committee, NPA had outlined a schedule of relaxations which it planned to place in effect on July 1 and Oct. 1, 1952. A.G.C. was represented at this meeting by President A. S. Horner and Glen W. Maxon, A.G.C. past president.

The midsummer steel strike and the attendant heavy loss of steel production, however, caused these relaxations to be postponed until April 1, 1953, a decision announced by NPA in August. In October NPA pushed back the effective date to May 1, 1953. Members of a task unit of CIAC then recommended on Oct. 29 that controls be relaxed immediately or no later than Jan. 1, 1953, in view of the rapidly easing steel situation, a proposal NPA agreed to consider.

Immediate relaxation of construction controls and their suspension Jan. 1 was also called for by the Construction and Civic Development Department of the U. S. Chamber of Commerce at an Oct. 22 meeting. The committee represented all segments of the construction industry. A.G.C. members at this meeting were Mr. Horner, Past President William Muirhead, H. C. Turner, Jr., and Managing Director H. E. Foreman.

Standby Control Plan Hinted

Although NPA feels that steel can be decontrolled during the second quarter of this year, the agency is leaving the final decision on controls up to the new Administration.

Citing the steel strike as the first interruption to decontrol plans, NPA said election results halted further such plans.

"It is anticipated that the final plan, which will reflect the best thinking of industry and government will assure the flow of materials to the military, atomic energy and defense-supporting programs without causing dislocations in industry and imbalances in the national economy," NPA said in a year-end statement.

"Currently, serious thought also is being given to the development of a production and material control system for use in the event of all-out mobilization. The necessity for immediate action to convert American industry to maximum production of military weapons in the event of enemy attack makes it imperative to have the means for achieving this objective at hand for instant use if it should become necessary."

The agency declared that the CMP system averted a "major threat to our national security" during the work stoppage in the steel industry.

Steel Decontrol Next Quarter

Regarding its relaxation of the construction controls this month, NPA said it was the opinion of its Facilities and Construction Bureau that, "were it not for the steel strike, a relaxation of controls might have culminated in the decontrol of steel by the first quarter of 1953. At present the bureau feels it highly possible that the decontrol of steel may be accomplished during the latter part of the second quarter 1953. However, the bureau points out that decontrol is much more difficult than the application of controls, and any future program will consist largely of meeting and solving these problems."

Acknowledging that recreational, amusement and entertainment construction "took a beating" immediately after NPA's clamp-down order of 1950, the agency said its new relaxations of steel and copper "should be a boon to the construction industry," and also "save industry and NPA considerable paperwork."

The postponement of relaxations on use of aluminum until May 1 was called necessary for "reasons beyond human control" due to lost production caused by power shortages in the Pacific Northwest and the Tennessee Valley. This material is expected to improve considerably in the second quarter of this year.

Humorist Is Air Tour M. C.

A work and play air tour of South America for members of the construction industry next month will be led by William Hazlett Upson, creator of Alexander Botts, the earthworm tractor salesman of fiction fame.

The tour, designed for those who wish to see construction or just sightsee, will be by Braniff International Airways, and will leave Miami, Fla., February 21. Cities visited will include Lima, Peru; Santiago, Chile; Buenos Aires, Argentina; Montevideo, Uruguay; Rio de Janeiro and Sao Paulo, Brazil; and Panama City, Panama.

The 28-day tour, returning in time for the A.G.C. 34th annual convention in Miami, will be conducted so that members may visit construction sites, interview industry leaders in the countries visited, study export markets for construction machinery and petroleum industry supplies, or go on sightseeing trips, play golf, or "make a scientific study of the siesta."

Information on the Alexander Botts tour can be secured from Braniff Airways at offices throughout the country or from Love Field, Dallas, Texas.

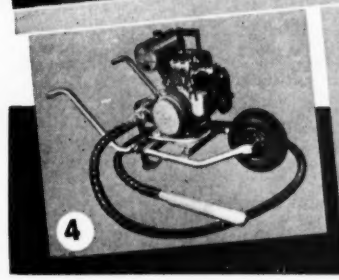
Book Review

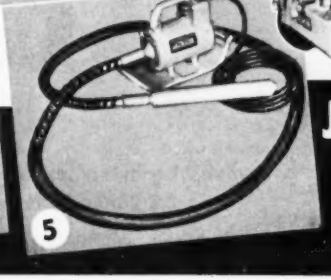
Roche Estimating Methods — Construction Report #432 — Premium edition. One volume, 704 pages, 8½" x 11", flexible leatherette binding with marginal index for fast, easy reference. $100.

W. Earle Roche, construction consultant of 44 years' experience, has organized a mass of pertinent information about the construction industry, and contracting procedure in this new volume. Although the prime value of the book is in its examples of estimating forms and cost summaries, it contains, also, innumerable tables of the type expected in contractors' handbooks. Illustrations of construction plant costs, work item costs, general and indirect costs, cost adjustments, profit allowance, write up, pricing of competitive proposals, extensive classified construction work check lists and broad glossary of construction terms are among the subjects listed in the volume, according to the publisher.

Further information may be obtained from the author, W. Earle Roche, 128 Western Ave., Glendale 1, Calif.

6 JACKSON MONEY-MAKERS for '53





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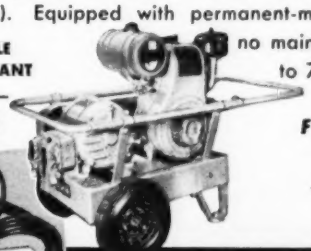

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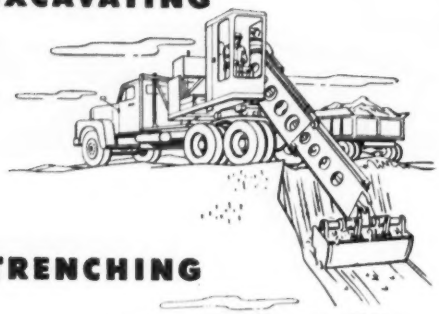

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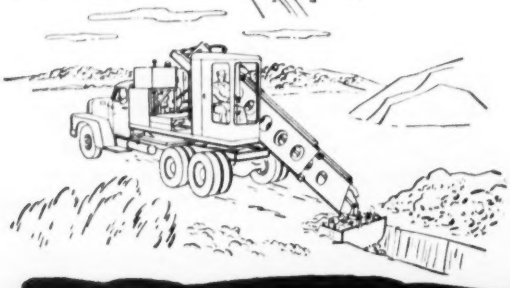

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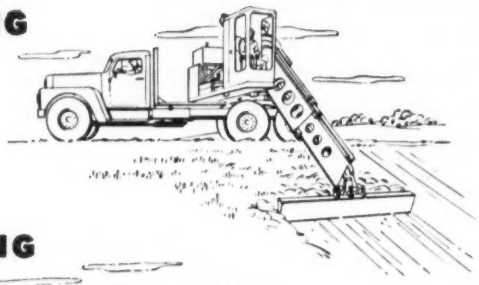

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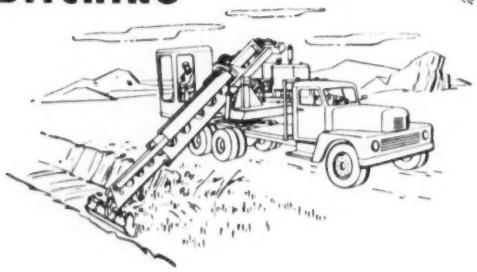
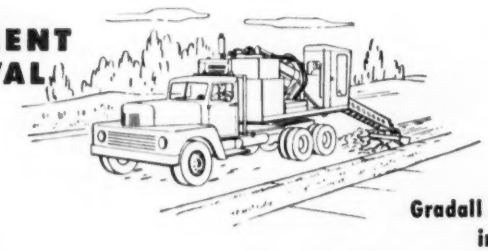


- **PAVEMENT REMOVAL**



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CISC Apparently to Continue Temporarily in Transition Period

- Contractor Representation Felt Desirable
- Hope For Hearings on Controls by February 1

» AT THE year's end, there appeared to be the probability that the Construction Industry Stabilization Commission would continue to administer the wage stabilization program in the construction industry until such time as the new Congress and the new Administration formulated their policies on wage, price, and materials controls.

The future of CISC was made uncertain early in December when the President over-ruled the Wage Stabilization Board in the coal case and the chairman and industry members resigned. The wage stabilization program now is being carried on by the Economic Stabilization Administrator and a Wage Stabilization Committee composed entirely of public members.

Industry members of CISC were confronted with a problem when the WSB public members resigned. The decision was made by CISC members to remain temporarily so that there could be contractor representation during the balance of the wage stabilization program, rather than leave administration of the program in the construction industry to the public members of WSC who have no specialized knowledge of the industry, or to the Labor Department.

Under the Defense Production Act of 1950, most of which expires April 30 unless extended by Congress, the President has the authority to relax or suspend such controls as he sees fit. President Truman did not abolish wage or price controls, but overruled the ESA administrator and WSB in the coal case and announced the determination to continue the controls during the balance of his administration.

No New Policies Indicated

Currently the administrator and the stabilization committee are pledged to "seal off" the effects of the President's decision in the coal case and not to use it as a precedent for other decisions. They have indicated that they will not make a new wage policy but will process cases according to current policy.

Actions of the CISC are subject to review by the ECA administrator and WSC. CISC industry members take the position that CISC can process cases only under the current formula so long as the current wage stabilization program remains in effect. General contractor representatives on the board have indicated they will resist demands for wage increases above amounts in the present formula.

There is, naturally, speculation on what President Eisenhower will do after the inauguration. While he has the authority to suspend wage, price or other controls, he may wish to permit Congress to act on the controls legislation.

Congressional Hearings Slated

Senator Capehart and Representative Wolcott, prospective chairmen of the Senate and House Banking Committees which will handle such legislation, both have stated the hope that their committees can start public hearings on the subject around the first of February. Hearings are likely to take two weeks or more, so that it will not be before the latter part of the month that the committees would have bills ready for presentation to the floor for votes. There is no way of foretelling how much before April 30 Congress would complete action on the legislation.

Until a new policy has been established by the new Congress and the new Administration, it is not likely that the current wage stabilization program will be sufficiently strong to be depended upon to keep wage rates and working conditions in line.

National Joint Board May Be Continued

» AT the year end the prospects were good for continuation of the National Joint Board for the Settlement of Jurisdictional Disputes beyond the expiration date of March 31.

During the past year the board had continued to bring about a gradual reduction of work stoppages caused by jurisdictional disputes. A major event of the year was the declaration of policy on July 15 by the general presidents of the 19 international unions affiliated with the Building and Construction Trades Department, American Federation of Labor, to prohibit picket lines in jurisdictional disputes.

At the same time, certain difficulties were encountered. The National Electrical Contractors Association, after proper notice, withdrew the first of the year from the agreement establishing the board. The electricians' and lathers' unions filed notice of withdrawal, but there was doubt as to the legality of their action for the reason that all unions had been bound by action of the Building and Construction Trades Department.

The constitution of the Department was changed at the annual convention in September to provide that the international unions themselves, rather than the Department, will make the commitments to use Board procedure. Subsequently the plumbers' and fitters' union, headed by Martin P. Durkin, designated as the new Secretary of Labor, filed a notice permitting it to withdraw if it saw fit as of March 31.

Later this month a special committee of the Department, which has been studying the problem, is expected to report recommendations to the Executive Council which will overcome objections which have been raised. These recommendations are understood to be satisfactory to employers.

Representatives of the employer associations will meet with the Department's Executive Council in Miami late this month to negotiate the changes in the agreement.

'52 Stoppages 5% Over 1951

More man-days of idleness resulted directly from work stoppages in 1952 than in any previous year except 1946, the Bureau of Labor Statistics reported. The 4,950 stoppages in 1952 were 5% above 1951. The 55 million man-days of idleness, about 0.5% of total working time, more than doubled the 1951 figure largely because of the steel strike.

The construction industry, with 11, led in the number of stoppages of at least 10,000 men. Five involved Atomic Energy Commission projects.

Recent Labor Cases Affecting Construction

• Compiled by A.G.C. Labor Relations Staff

Federal Wage and Hour Law Cases

U. S. Supreme Court to decide conflicting decisions.—The United States Supreme Court has agreed to review a ruling by the Third Circuit United States Court of Appeals which had held that if a construction company was engaged in the repair and maintenance of interstate highways, its off-the-site employees were engaged in production for commerce; and therefore, under the jurisdiction of the Federal Wage and Hour Law. (*Maurice J. Tobin v. Alstate Construction Co.* (195 F. (2d) 577) (21 Labor Cases 66,868.)

This decision is in direct conflict with a decision by the Supreme Court of Pennsylvania, which held that workers at a stone quarry who produce and process materials for local use in the repair and maintenance of interstate highways were not in commerce and not under the Federal Wage and Hour Law. (*Thomas v. Hempt Brothers,* Pennsylvania Supreme Court) (21 Labor Cases 67,038.)

In the Alstate case, the court pointed out that the company was engaged in the production, sale, distribution, and application of a bituminous concrete material, known as amesite, used in resurfacing streets and highways. In this case, the material was processed at a plant in Pennsylvania and then applied on highways within the state by the company's employees. The employer contended that its off-the-road employees, such as mixers and other plant employees, were not sufficiently engaged in interstate commerce or the production of goods for commerce so as to come within the jurisdiction of the act. On this point the court said: "While the precise question has never been passed upon by an appellate court, analysis of the language of the Supreme Court in recent cases arising under the Act leads inevitably to the conclusion that coverage was intended for off-the-road employees such as are here involved. By its terms, the act applies to all employees 'engaged in commerce or in the production of goods for commerce.'" It is expected that the United States Supreme Court will hand down a decision on both of these cases during its present term.

Original road construction held not covered.—On Dec. 1, 1952, the United States Court of Appeals, Sixth Circuit, ruled that although the repair or improvement of highways or other facilities for interstate commerce may constitute engagement in commerce or the production for commerce within the meaning of the Federal Wage and Hour Law, nevertheless the original construction of local facilities is not within the coverage of the act merely because the facilities, when completed, will be used for interstate commerce. (*Koepfle v. Garavaglia,* United States Court of Appeals, 6th Circuit) (22 Labor Cases, 67,267).

The facts of the case as reported by the Court are as follows: "The question presented by this appeal is whether the building of a highway located entirely within a single state, newly constructed upon a right of way which runs through an area where no highway has theretofore existed, constitutes 'commerce' or the 'Production of goods for commerce' within the meaning of the Fair Labor Standards Act of 1938, as amended. From October 30, 1948, to May 15, 1949, plaintiff was employed by defendants as a watchman upon the Edsel Ford Expressway, which was then being constructed by defendants. Plaintiff filed an action claiming $3950.96 for 1508 hours overtime work which he alleged had been wrongfully withheld in violation of provisions of the Fair Labor Standards Act. . . .

"The question squarely presented is whether the fact that the Edsel Ford Expressway crosses other streets in Detroit and eventually, when completed, will carry interstate traffic makes it fall within the category of constructions to which the Fair Labor Standards Act applies rather than the regulations and rates of the Michigan State Highway Department.

"The Secretary of Labor, in a brief 'amicus curiae' filed by leave of court, contends that, irrespective of the ruling upon the merits, the record does not warrant a summary judgment of dismissal.

". . . We think the District Court correctly held that the Fair Labor Standards Act does not apply.

"Plaintiff urges that original construction upon land never before used as a highway falls within the definition of 'commerce' or the 'production of goods for commerce' because eventually some interstate commerce will move upon it. If this is the applicable rule, every passable country road is within the same classification, for practically every road, however isolated and however local, at some point carries passengers or freight to or from some interstate destination. This sweeping contention is not sustained by the sound and applicable law."

Cases Under the Taft-Hartley Act

Association shutdown ruled legal.—A plumber's union with which subcontractors had labor agreements struck to obtain an illegal closed shop. The general contractors shut down all their jobs when they reached a point where they could not proceed economically without the installation of plumbing. The NLRB General Counsel contended that the shutdown was an interference with the union's protected rights. The Trial Examiner held that the shutdown was not an anti-union action, but was motivated by a desire to prevent uneconomic operations and therefore did not violate the Taft-Hartley Act. (Central and Northern California Chapters, Associated General Contractors of America) (Case 20-CA-620).

Decisions of NLRB General Counsel.—The NLRB Counsel reversed an NLRB regional director's refusal to issue a complaint on the following set of facts:

A union in a dispute with Company A picketed A's plant as well as adjacent property on which Contractor B was constructing a new factory for A. The General Counsel held that in his opinion such picketing violated the secondary-boycott provision of the Taft-Hartley Act, since it induced a work stoppage of the contractor's employees. (Administrative Decision of the General Counsel Case #419, Nov. 3, 1952). The NLRB General Counsel ruled that the NLRB may not hold a hearing in a jurisdictional case if the investigation fails to furnish evidence of unfair labor practice and the mere statement by a union representative that the "union could go on strike to bring the matter to a head, but did not want to strike or intend to do so" did not amount to a strike or concerted refusal to work so as to justify issuance of a complaint charging a jurisdictional dispute.

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High-speed project at Travis Air Force Base

BIG YELLOW MACHINES USED BY MORRISON-KNUDSEN TO BUILD NESTING AREA FOR GIANT PLANES

Covering a 2,800-acre plain of the Sacramento Valley near Fairfield and Suisun, Calif., Travis Air Force Base handles some of the very largest bombers and transport aircraft. Training missions are flown regularly from there, and a large percentage of Korean casualties are winged from Japan to this base, which has the largest Air Force hospital on the West Coast.

When primary expansion at Travis called for larger plane parking areas, a high-speed contract was awarded to Morrison-Knudsen Company, Inc., Boise, Idaho. Additional construction included water facilities and an underground electrical system.

Plenty of heft—a D8 pulls a 100-ton Porter compactor, bearing down on sub-base fill for new plane parking area.

Every project has its problems, and this was no exception. To handle mammoth aircraft, runways and parking areas at Travis require thick asphalt and concrete surfaces. Sub-base material of deep rock layers increases their strength. However, there was far from an adequate supply of rock near the aprons for the new construction. This necessitated an endless chain of hauling units carrying fill rock from the stockpile to excavations, and returning with excavated earth.

Another problem posed was the fast production of aggregate material for concrete and asphalt surfacing. To solve this, a twin batching plant was erected at the base. Between them, the twin 4-compartment bins had a 320-ton capacity. Four sizes of concrete aggregate and sand, shipped in by rail, were trucked to the plant.

HALF-MILLION CUBIC YARDS JOB

Keeping a huge job moving on the double day after day requires, among other things, the use of tough machines. For this reason, Morrison-

Cat DW10 Tractor with No. 10 Scraper steps right along with excavated material, averaging 5 trips per hour on a 3-mile haul at Travis Air Force Base.

Knudsen concentrated largely on its Caterpillar equipment. And the big yellow Diesel tractors, 'dozers, scrapers and motor graders came through with outstanding performance.

In a well-organized setup, Cat-built units were busy all over the base. DW10 Tractors with No. 10 Scrapers, going 1 foot to 3 feet to 4 feet below the existing pavement, excavated and hauled poor soil and adobe. With built-up sides, the scrapers averaged 11 cubic yards per load. They made 5 trips per hour on a 3-mile round trip, over roads maintained by No. 12 Motor Graders.

Duties assigned husky D8 Tractors with 'Dozers were varied and many. One D8 worked in a borrow pit cleaning up around the shovel that turned out 350 to 400 ten to eighteen cubic yard loads of select material per day. Other D8s fed conveyors in the twin batch plant and stockpiled sand and gravel. Others were used to spread sub-base material and, where needed, to serve as pushers. Still another D8 pulled a 100-ton Porter compactor.

Totaling all earth and rock handled during the excavating and fill placement, M-K's equipment moved more than half a million cubic yards. Said Project Manager R. F. McCune: "Caterpillar-built machines enabled us to maintain our speedy schedule."

STANDARDIZATION PAYS OFF

Many contractors have found that standardization on rugged yellow equipment is good business. Every machine is engineered and built to stay on the job steadily in conditions that slow down ordinary machines. Other advantages include interchangeability of parts for simplified maintenance, increased operator efficiency and on-the-spot service from the nearby Caterpillar Dealer.

All this adds up to big production at rock-bottom costs. For further facts, see your Caterpillar Dealer. His file of performance data on construction jobs all over the country is well worth seeing. He is available at your convenience for information and a demonstration.

Two Caterpillar D17000 Engines power this 44-ton locomotive, used for switching cars at Travis Air Force Base.

Two D8s with No. 8S Bulldozers feed conveyors at twin batch plant for aggregate. D8s were also used to stockpile and spread sub-base fill.

CATERPILLAR TRACTOR CO., PEORIA, ILLINOIS

$10.7-Billion Backlog Reflects Nation's Need for New Schools

- Survey Reveals Shortage of 325,280 Classrooms
- Increased State and Federal Aid Suggested

» A CONSTRUCTION PROBLEM of sobering proportions is being unrolled before the American public this month as the U. S. Office of Education reveals the latest results of its survey of school building needs.

The comprehensive, state-by-state appraisal of elementary and secondary school construction needs indicates a nationwide shortage of 325,280 classrooms as of September 1952, or housing for 9.4 million students.

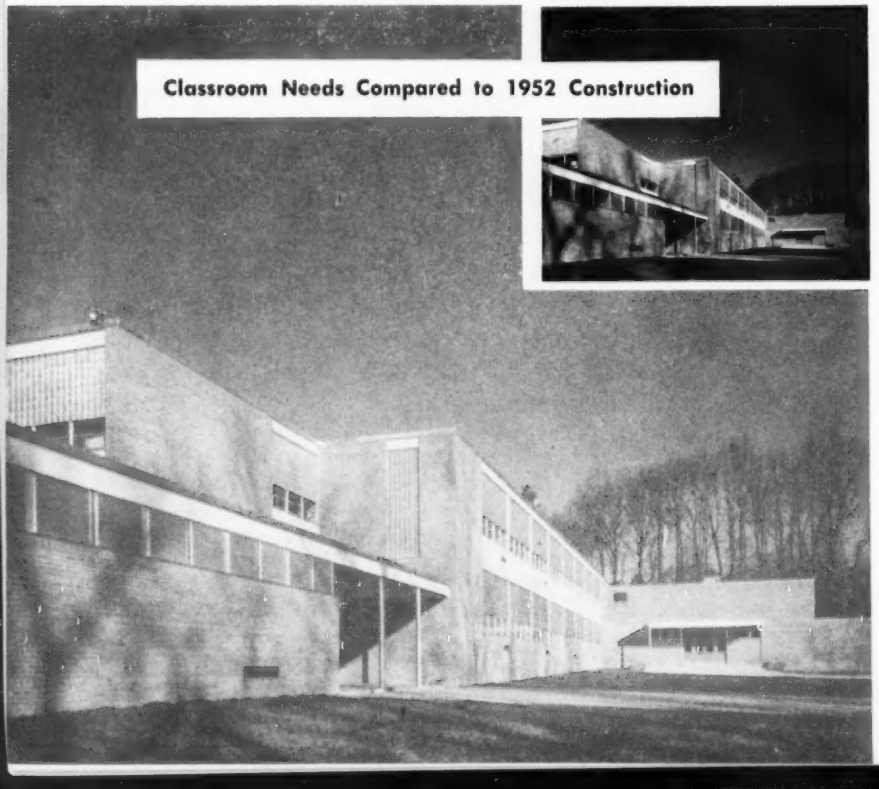
To bring the inadequate school systems up to par would require expenditures totaling $10.7 billion, the survey found, a sum which the communities of the nation fall far short of having available. Even if their resources were taxed to the limits, the deficit would be almost $5 billion, the federal education officials state.

These astronomical statistics portray the plight of thousands of school districts throughout the nation. Compiled in the aggregate by the most thorough school survey ever undertaken in the United States they reflect what is an individual problem to almost every township and large city. Of the 53 states and territories in which Congress last year authorized the survey, 37 have completed the months-long project and it is on the basis of these representative states, with their 16 million students, that the dimensions of the national problem are projected.

$16 Billion Future Need Seen

The shortage of 325,280 classrooms is of last September. The statisticians reveal that today's needs will skyrocket year by year until 1957-58 when the crest of enrollments will be reached. Commissioner of Education Earl J. McGrath recently defined the challenge in terms of construction which should be launched before then —600,000 new classrooms, with their attendant number of gymnasiums, lunch rooms, laboratories, shops, and offices—a goal costing $16 billion.

Some indication of the size of the accumulated need for school construction (325,280 classrooms) can be realized by a comparison with the rate of construction in 1952 (47,000 classrooms).



Reasons for Accumulated Needs

Behind the immense backlog of schoolhousing needs of today are several understandable factors—rapid enrollment increases, tendency of students to continue in school longer, new methods of teaching and the trend to consolidate school districts. The facts are:

- School officials point out that live births have exceeded three million each year for the last six years, reaching a peak of 3.8 million in 1951. As a result, public school enrollment will shoot to 31 million in four years.
- Students remain in school longer these days. Almost twice as many stay on to graduate from high school as did 30 years ago.
- Teaching practices today demand more floor space per pupil as the philosophy of "learn by doing" is followed. Shops and laboratories for art, nursing, science, homemaking and mechanics have doubled the floor area required per pupil in the last 20 years.
- To provide better education, school districts are consolidating and eliminating the one-room schoolhouse from the American scene. About 130,000 disappeared from 1919 to 1950. Some indication of the need for new and larger schools is apparent in such examples as Illinois, where school districts have been reduced from 11,955 to 3,658 in six years, and in Missouri, where the reduction has been from 8,327 to 4,838 in three years.

Construction Fails to Keep Pace

Construction has not been undertaken sufficiently to meet these needs, federal reports show. It was not until 1951 that expenditures, in terms of the 1951 dollar, reached the level of 1925. During the 26-year period between those two dates, school construction suffered from a depression, a world war, materials controls and financial problems.

Construction in 1952 reached an estimated 47,000 classrooms at a cost of $1.4 billion—hardly a dent in the backlog of need which in September had reached the 325,280-classroom figure. Consequently, the unprecedented deficit is not being met.

The current obstacle of forbidding stature remains the lack of money, the survey noted. If taxed to legal limits and allowed to increase their bond indebtedness, local communities could raise $5.8 billion of the $10.7 billion needed now. The difference would

have to come from "outside assistance," the agency said.

The Office of Education expected that "Obviously these needs will not be fully met in 1952," and warned that "unless the tempo of school construction is materially increased, the needs for additional school facilities will continue to grow because of future increases in enrollment. It is obvious that financing practices will have to be improved, and that new and substantial resources will have to be tapped on a broadened tax base if American boys and girls are to be provided with adequate school facilities."

How to Raise the Money

The agency made these recommendations for raising more funds:

- More realistic property assessments.
- Modification of state imposed restrictions on bonded debt.
- Use of special school construction tax levies to finance, in part, school plant programs on a pay-as-you-go basis.
- Merging of school districts into larger fiscal units, thus spreading the tax base.

"Even with the foregoing action to improve local financing of capital outlay," the study concluded, "the provision of adequate school housing requires that each state attack the problem on a state-wide basis with a substantial portion of the funds provided from state sources. Several of the states are now providing significant state financial assistance for school construction and there is a pronounced trend toward greater state participation."

Credit Low Costs to Builders

The U. S. Office of Education's extensive survey of school building needs noted that construction costs in that field are encouraging in the face of other rapidly rising prices.

"Although school construction costs have risen substantially during recent years," the survey reads, "the increase in the costs per classroom has not equalled the increases in other costs of education." It compared the cost increase of new classrooms—87% (from 1936 to 1950) with cost increase of teachers' salaries—132%, current annual operating cost per pupil—165%, and general construction costs—152%.

The relatively smaller increase in building costs was attributed to improved design and construction methods, such as the lowering of ceiling heights, concrete slabs on grade, composition floors instead of maple flooring, masonry units instead of wall plaster and roof slabs used as classroom ceilings.

Stratford Junior High School was built for $1.5 million as part of the Arlington County, Va., building program. Wise Contracting Co., A.G.C., Richmond, was the contractor. Rhees Burket of Washington, D. C., was the architect.

The Eastern Suburban Junior High School of Silver Spring, Md., was built by John Tester & Son, A.G.C., Washington, D. C. The $1.2-million school serves 800 students. Photos below—typical classroom, home economics kitchen and gymnasium—indicate the kind of construction in modern schools. Ronald Senseman of Takoma Park, Md., was the architect.

Forms of State Assistance

A number of states have taken remedial action in the past few years, aimed at stimulating local school construction. Some have established matching funds, some have made outright grants, some have extended loans, and others have passed special levies.

Georgia, Maine and Pennsylvania are using the revenue bond principle to aid localities in meeting their school building requirements, with state agencies empowered to finance construction through revenue bonds amortized from rentals paid by the localities for use of the structures. Indiana may do likewise.

State general obligation bonds are financing school building aid in California, Delaware, Maryland, North Carolina, South Carolina and Washington, while other states obtain the funds for their state-aid programs from general revenue appropriations.

New state taxes have been necessary to support school building aid programs in at least two states—South Carolina and Tennessee, both of which

(Continued on Page 38)

enacted sales taxes in recent years primarily for that purpose.

Accompanying the trend toward new and increased state aid for school construction are increasing proposals to broaden the borrowing and taxing powers of local school districts to aid them in financing their school building needs. States which in recent years have liberalized local borrowing powers for such programs include Montana, New York, Ohio, West Virginia and Wisconsin. Those which have broadened local taxing powers include Kentucky and Utah. As noted above, many states are consolidating their school districts and their resources to build larger central schools.

The survey found a remarkable difference in the abilities of various states to provide the construction needed. Three of the 37 states reporting have income payments of less than $4,000 per pupil enrolled, but three others have income payments of more than $13,000 per pupil.

For one of the states to provide schoolhousing facilities currently needed, it would require 11.3% of its total income for one year. For another, it would take only 2.7%. Thirty-five of the 37 states do not have sufficient local resources under existing laws to meet their current capital outlay needs.

Possibility of Federal Aid

As is expected, the agency pointed out the possibility of enlisting federal aid to solve the impasse:

"There is a feeling on the part of many people that financing the construction of public elementary and secondary school facilities is, in part, a federal responsibility to be met through a program of grants-in-aid to the states for general school construction beyond the specific assistance given to the federally affected districts. This proposal involves both policy and economics, and it can be resolved only by the citizens of the United States through their elected representatives."

Commissioner McGrath told Congress last year that "the present bottleneck is not scarce materials but scarce dollars" and called for some measure of federal aid.

"In my judgment," he declared, "this school construction problem will not be solved until the taxing resources *of the nation* are employed to supplement those of states and communities in meeting the needs of the nation's children."

Government Aids 940 Schools

The federal government, at present, is in the school construction picture only in the so-called "federally-affected areas" where the abnormal increase in population is because of defense installations there. By last September, the federal government had reserved $236 million for construction of 940 schools in such areas.

It is anticipated that the school building need will be brought to the attention of Congress this year and eventually the entire question of federal participation may be aired. In the meantime, forecasts indicate that this type of construction will be planned and contracted in greater-than-ever amounts in 1953. Whether the tremendous backlog the federal survey has uncovered will be met and who will pay the multi-billion-dollar cost remain to be seen. It is almost certain that sober discussions will increase with the increasing school enrollments and some earth should turn before the grand crisis in 1957.

New Group Studies Commercial Building Lag

- Chamber of Commerce Committee Blames Taxation for Slump

» THE FAILURE of commercial building to keep pace with the expansion of private construction generally and possibilities of reviving investment in that type of construction have become the concern of a committee recently set up by the Chamber of Commerce of the United States.

Under the chairmanship of William Muirhead, secretary-treasurer of The Associated General Contractors of America, the committee will study measures to restore confidence in rental and commercial property as investment markets. At the present time, because of low returns there is proportionately less commercial building being constructed than at any time since 1920, except in the midst of World War II, when there was little private building of any kind.

As industrial expansion tapers off in the near future, a shift to office and loft buildings, stores, hotels and apartments will be required or private building activity will undergo "a marked decline," the committee believes.

In 1952, commercial building accounted for only 4.4% of all private construction, in comparison with the pre-depression days—10.2% for 1920 through 1924 and 11.8% for the period 1925 through 1929.

Even during the depression the proportionate volume of commercial building held up well with ratios of 13.3% for the years 1930-34 and 8.7% for the years 1935-39. "On the basis of all these figures, it is apparent that commercial building has not kept pace with the expansion of private construction generally," the committee concluded.

The current slump is directly traceable to excessive taxation, the committee finds.

"If one type of investment lacks favor in comparison with other types, the reason usually is the very simple one that its earnings prospects don't stack up well in the comparison. This seems now to be the case with investment in income-producing real estate. On the one hand, it must cope with high construction cost and with constantly mounting maintenance costs. On the other hand, it has to face a combination of local and federal taxes which seem peculiarly designed to prevent it from profitably realizing on its initial costs or keeping ahead of its maintenance and modernization costs. The resulting squeeze is at the root of the investment problem."

Measures to offset the stultifying impact of taxation will be studied and reported from time to time to the construction industry by the Subcommittee on Taxation of the Construction and Civic Development Department Committee.

New York Seeks Solution

A total of 650 new schools costing $575 million are currently under construction or in some stage of preparation in New York State, with plans for the next few years indicating a school-building boom in the state of unprecedented proportions, according to a study by *The New York Times*. By 1956, about 1,000 schools will be built at a cost of $900 million. "Despite the vast expenditure of funds, the building shortage is still acute," the newspaper declared.

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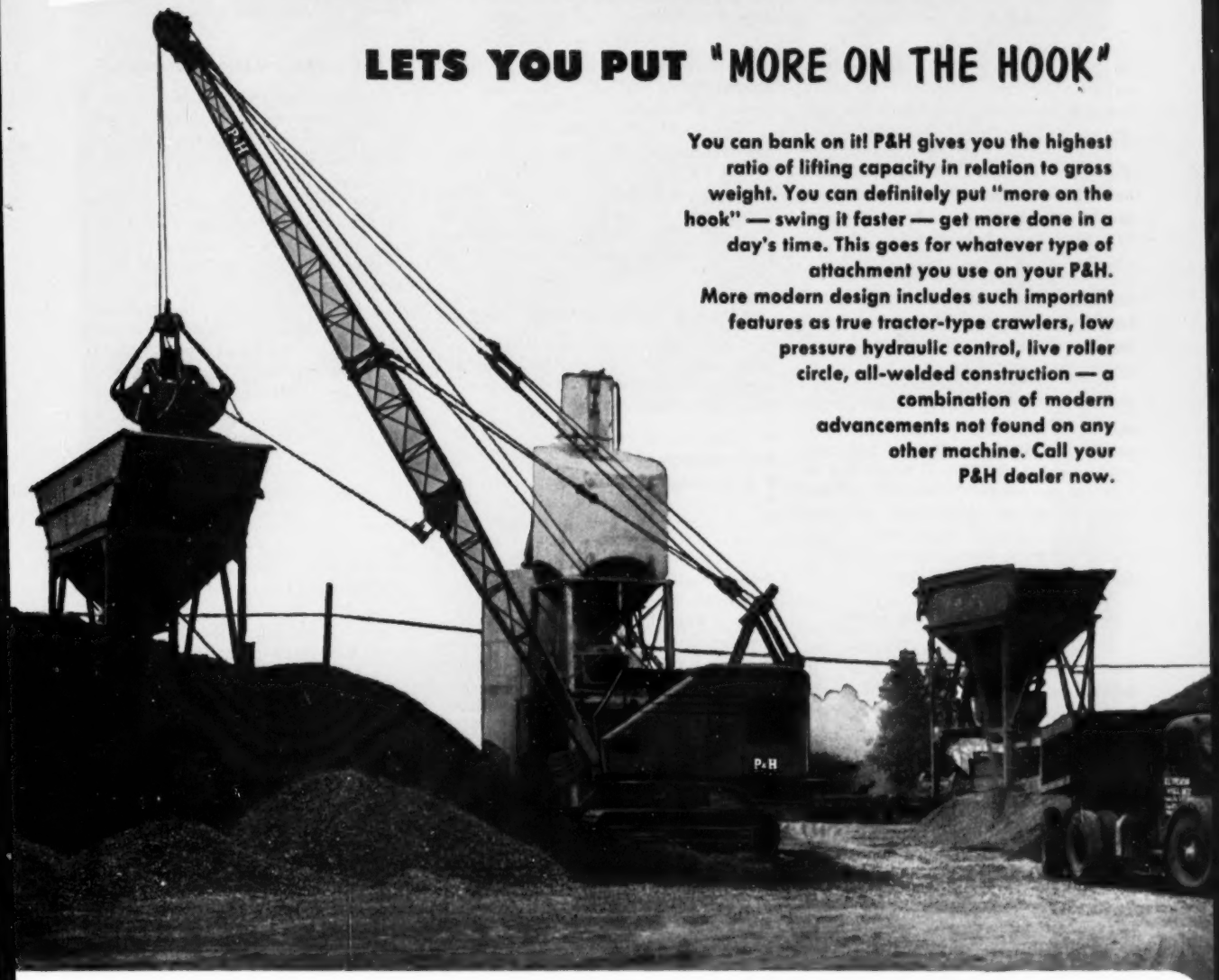

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School Builders Seek Economy Measures

• B.R.A.B. Conference Explores Possibilities for Savings

» A WORKING CONFERENCE to explore the role of research in reducing school construction costs was conducted last month in Washington, D. C.

Held under the auspices of the Building Research Advisory Board and co-sponsored by the American Institute of Architects, U. S. Chamber of Commerce and U. S. Office of Education, the meeting sought to find how economies could be made in school building. The inability of school boards to pursue sorely needed building programs justifies such studies, conference organizers felt.

Most of the measures advocated during the sessions were based on design and planning. The 40 participants—architects, builders, and educators included—offered a number of avenues for possible research. Among those broached were: Study of ideal classroom, special instruction room and auditorium sizes; ceiling heights; and architectural planning.

Citizens Resent High Costs

John W. McLeod, a Washington, D. C., architect who specializes in school design, summarized the problems hampering construction programs even where facilities are admittedly inadequate. He blamed a rift between architects and educators on one side and the tax-paying public on the other.

"The rising cost of construction alone would have created difficulties," the architect said. "Bond issues which were supposed to cover specific projects were constantly falling short of their goal. Additional funds had to be made available to keep programs from falling behind. This unfortunate condition tended to create an impression in the public mind that individual projects were costing more than they should . . . Aggravating the school building picture were the staggering increases in enrollment which were upsetting school building programs . . . The net result of these conditions was the increasing demand for more and more funds to construct more and more schools, and the average citizen, while still in favor of good schools, was beginning to question some of the bills he was asked to pay."

To combat public opinion of this nature, participants were asked to seek ways of economizing in the construction of schools. Recommendations were made by a number of conferees, among them Walter D. Cocking, editor of *The School Executive*.

Mr. Cocking predicted that school construction would boom for the next 12 to 15 years. "In terms of new buildings, 6,000 to 7,000 new structures will be built each year," he forecast. "At present prices, more than $1 billion per year will be required."

Cocking Urges Unusual Steps

Such expenditures will require unusual departures by builders and designers, he felt. Some of the measures he asked included:

- Better use of corridors
- Classrooms of various sizes
- Elimination of many partitions
- Decrease size of auditoriums
- Elimination of lecture rooms

"Corridors, either single-loaded or double-loaded, are the most expensive space in a school building," he said. "They have little use except as circulation passages. In my opinion, we can no longer justify this valuable space for only circulation purposes. Ways must be found to use it also as instructional space." He named schools following that practice.

"The single standard size classroom must go," Mr. Cocking declared. "Classrooms, especially in secondary schools, should vary in size, both for economy and for educational reasons. . . . A recent study conducted in connection with planning a new high school in New Jersey demonstrated a considerable saving of money and increased efficiency in use by providing for three different classroom sizes."

Deplores Too Many Partitions

He also condemned excessive use of partitions. By "cluttering up" school buildings with too many of them, usefulness is impaired, he asserted. "An example of 'over-partitioning' is the customary method of dividing the commercial department into many small rooms. The chances are that greater efficiency would be secured by having one large space free from floor to ceiling partitions."

Economies could be realized without endangering good educational practice by reducing the size of auditoriums, Mr. Cocking suggested. He said the large auditorium is unwieldy and unjustified on the basis of use, as well as being expensive to build and maintain.

Calls Lecture Rooms "Wasteful"

Other savings can be made by eliminating lecture rooms ("always a wasteful space"), lunch rooms and individual kitchens, the magazine editor suggested.

Tyler S. Rogers, research director for Owens-Corning Fiberglas Corp., and a B.R.A.B. board member, warned the conferees that "cutting costs is not a job for amateurs."

"School boards need the guidance of highly skilled school architects, working in harmony with highly skilled contractors," he said. Use of new designs and construction methods and the modernization of building codes would all contribute savings, he thought.

Modern Design Economical

"Schools of today should not be forced to follow obsolete patterns. A recent study shows that modern fluorescent lighting costs substantially less over a five or ten year period than incandescent lighting. We formerly required high ceilings to provide a certain minimum volume of air per pupil; now we can get better ventilation with cleaned and conditioned air by mechanical means. Fire laws applicable to multi-story school buildings need modification when applied to one-story structures which provide safe egress to ground level at all openings, including windows. Modern flush valves on toilet fixtures speed up use as compared to old style, slow-filling tanks; thus fewer fixtures can serve more pupils than some obsolete codes require."

The Building Research Advisory Board reports that an evaluation of the preliminary conference will determine whether subsequent meetings will be called or specific research undertaken to make school construction more economical.

General contractors were represented at the conference by Contractor Ray S. Noonan of York, Pa., and Welton A. Snow, manager of the Building Division, The Associated General Contractors of America.

A bill filed for consideration of the Massachusetts legislature proposes that the state pay up to three-quarters of the cost of new schools.

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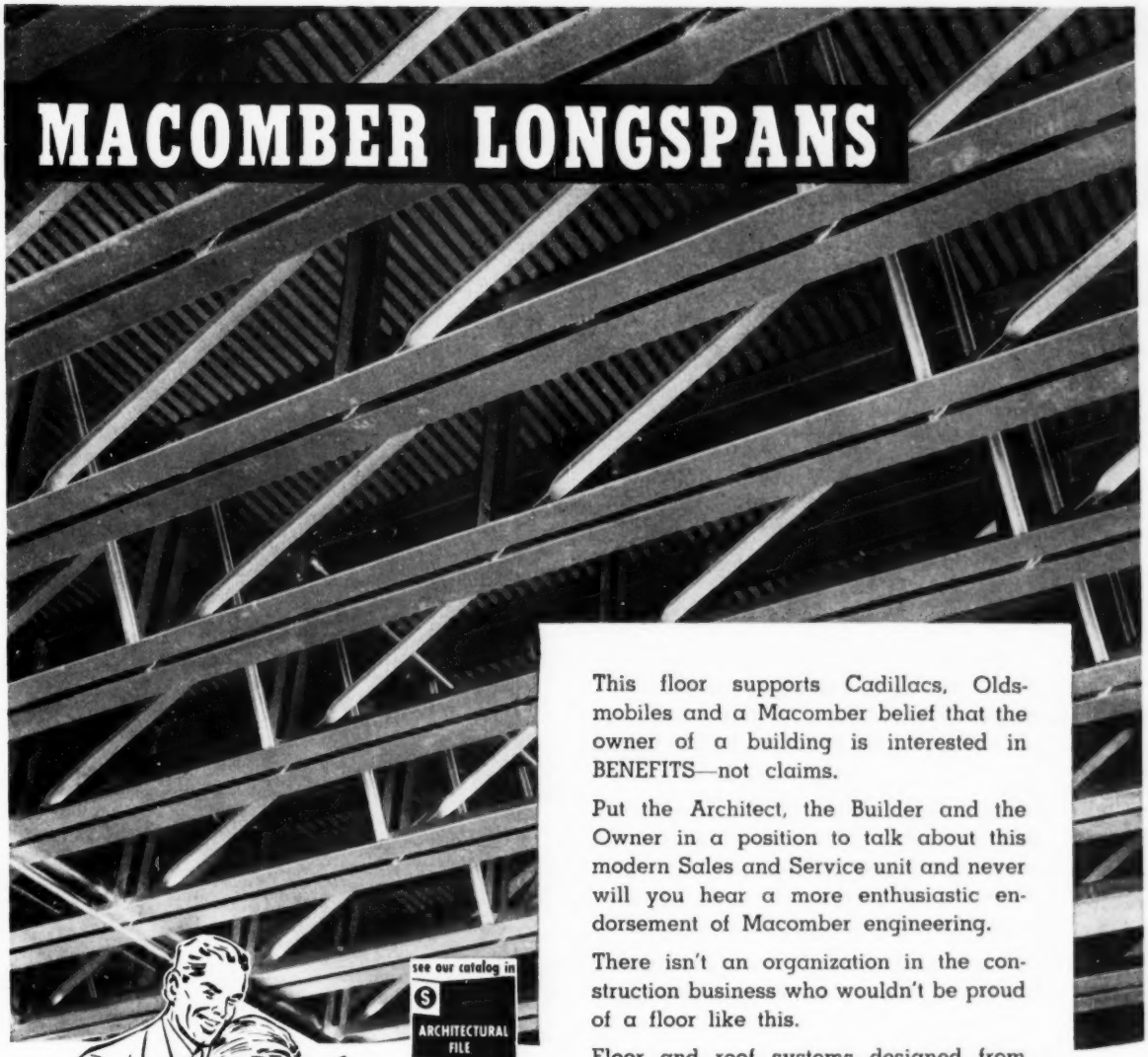

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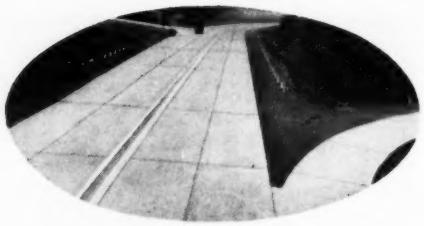

Penn-Lincoln Parkway,
Allegheny Co., Pennsylvania.
Placed in 1947.

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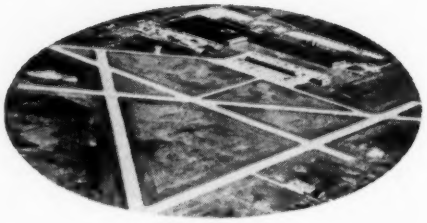
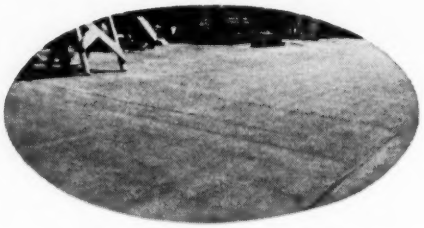
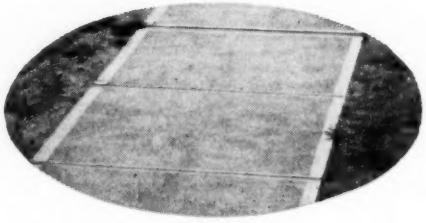


O'Hare Field,
Park Ridge, Illinois.
Placed in 1942.



Plant paving, U. S. Rubber Co.,
Eau Claire, Wisconsin.
Placed in 1944.



Sidewalk,
Babylon, Long Island.
Placed in 1944.

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Three views of urban expressways in three corners of the United States. Right: The Hollywood Freeway, part of Los Angeles' master plan calling for 310 mi. more construction in next 10 years. Above: The Pulaski Skyway, completed in 1933, carries traffic for 3 mi. over New Jersey swamps and industrial areas to New York City. Below that: Newly completed section of the two-deck Alaskan Way Viaduct which runs through Seattle. The $10-million viaduct by-passes the congested business district.

Big Cities Planning and Building Modern Urban Expressways To Ease Traffic Jams

» TRAFFIC CONGESTION has won a place as one of the nation's top economic problems. Out on the highways driving has long been a chore, but it is on crowded city streets where congestion has become a hallmark of the decade.

Workers, shoppers and businessmen maneuver grimly through outgrown street systems. Huge trucks grind along at an irritating pace, forced to stop and start numerous times in cities they would avoid if they could. The result is that driving in many cities is a nerve-twanging experience and measurable economic losses are sustained. High accident rates, high insurance costs, high vehicle operating expenses, losses in time, losses in property values and losses in business-district sales are some of the ill effects of traffic congestion.

Faced by these problems, the citizens of a number of cities have renewed demands for construction of new urban expressways. Typical is the declaration which Mayor Edward J. Jeffries of Detroit made eight years ago as evidence mounted in that city for such action. "Detroit must have express highways," he asserted. "In no other way can we solve our transportation problem."

These modern, controlled-access highways are being built to chute traffic through great communities and feed incoming vehicles onto street systems in a swift, orderly manner. The cost has proved high, but civic leaders in most instances have been quick to see the cost of congestion as higher.

Arthur C. Butler, director of the National Highway Users Conference, reported recently that traffic congestion is costing New York City over a million dollars a day. Objective studies have revealed that the price which motorists pay to travel over poor streets is greater than the price attached to new expressway construction. Other investigation has served to "debunk" some long-cherished but unsupported theories.

One finding is that cities do not

Federal Aid to Expressways

About $137 million—24% of the total federal aid authorized for highways recently—is slated to go for urban developments. In the past three years the Bureau of Public Roads has approved $238 million for *heavy* expressways. State and city funds applied to the 413 mi. involved were probably much more. In addition, the federal government approved about $129 million for lighter expressways and improvements, a sum probably more than matched by the states for such construction.

The new Congress Street Expressway follows this route slashed through the heart of Chicago.

One of Chicago's first expressways—the Outer Drive—follows the Lake Michigan shoreline.

often benefit by having heavy traffic thoroughfares run through their business districts. Some merchants have believed that if a state route ran past their stores, tourists would stop and shop. What they did not realize was that through traffic caused a congestion in their downtown areas that discouraged local shoppers. Consequently, citizens turned to suburban shopping centers rather than battle downtown traffic.

Found Economically Feasible

The three major economic justifications for expressways are based on these three findings, traffic experts believe:

1. Expressways reduce the number and cost of accidents.
2. Expressways reduce vehicle operating costs.
3. Expressways reduce driving time.

Professor Ralph A. Moyer of the Institute of Transportation, University of California, has found that savings realized over 40 years on a new expressway carrying 40,000 vehicles per day would justify expenditures of at least $1.2 million per mile. Several expressways carry twice that many vehicles.

Daily Savings Indicated

In determining the feasibility of a Columbus (Ohio) expressway system, the consulting engineering firm of Howard, Needles, Tammen and Bergendoff demonstrated recently that a daily saving of $3,600 could be expected by reduction of accidents by such a facility.

Using data from other sources, the firm found a significant difference between cost of operating vehicles on city streets and on expressways. On streets, the average cost was 5.6¢ per vehicle-mile; on expressways the cost was 4.2¢ per vehicle-mile. The difference in operating cost, applied to the traffic load anticipated on the Columbus expressway, would mean another daily saving of $2,250 for motorists using it.

The engineers determined, on the basis of other research and facts, that the time which could be saved on the proposed expressway would be worth $17,600 to the users each day.

Adding those three elements alone—reduced operating costs, reduced accident costs and reduced driving time costs—they came up with a total of $22,850 per day. Over 30 years, life of the expressway, this amounted to $326 million. Total cost of the facility was estimated at a fraction of that—$92.8 million.

Homeowners are sometimes disturbed by the fear that running an expressway near their property may reduce property values. In some instances, that concern has proved unreal. The Texas State Highway Department and the U. S. Bureau of Public Roads recently revealed a study which concluded that property values in nearby areas rise extraordinarily and improvement of land use is stimulated by a high-capacity, controlled-access express highway providing free traffic flow into and through a city.

Property Values Increased

The Gulf Freeway, which runs through Houston, was the subject of the research project. Actual property sales during the five-year period, 1945-50, were surveyed. It was found that properties within the zone of influence "exceeded by 53% the increase in value generally noted on other properties in Houston." Land values along the freeway increased 65% more in dollar value than similar properties lying distant from the freeway.

Such studies have had an influence upon the citizenry of most of the nation's large cities and there has been

View of Los Angeles' Arroyo Seco Parkway, 7-mi. expressway built in 1940 at a cost of $6 million.

Some cities build their expressways around the city limits. This is Boston's new circumferential route.

more realistic reception to practical expressway proposals. Master plans are being drawn and long-range objectives approved with deeper understanding of the problem.

Expressway Cost Runs High

It is becoming accepted that the cost of almost all expressway projects is high. Several million dollars per mile is frequently the price of acquiring right-of-way and constructing the facilities. To cut a 300-ft. wide swath through a highly congested area, the planners must sometimes move thousands of families and demolish many buildings. Existing public utilities must be carefully protected or relocated. The ensuing traffic problem must be dealt with. Compared with a primary highway through open countryside, the task is infinitely greater for the constructor.

Cities have developed a number of cost-sharing formulas to make such construction possible, and a variety of arrangements with the federal and state governments have been established. Joseph Barnett, chief of the Urban Expressways Department of the BPR, has said that the agency feels the cost of expressways is more than justified in most cases.

Financing Plans Vary

Expressways in California are financed entirely by state-federal funds, with no financial participation by the cities involved. In Texas, construction is financed by state and federal matching funds, while the city pays for the right-of-way. New York City provides some expressway facilities completely and, in other instances, provides the right-of-way only. Detroit and Chicago expressways are paid for, both right-of-way and construction, in a compact between city, county and state with federal matching aid.

During 1952 millions of dollars were expended by cities moving toward completion of complex expressway master plans. One such program for Detroit proposes 105 miles of expressways to cost an estimated $700 million. Two major segments of the system—the John Lodge Expressway and the 15-mi.-long Edsel Ford Expressway—will intersect the city at a complex interchange. Cost of these two facilities is running about $8 million per mile.

New York City, which has been building limited access urban highways for 20 years and is laced with 200 mi. of such routes, carries on a continuous construction program.

Chicago's comprehensive expressway plan consists of routes penetrating the city from three directions. There will be no cross traffic. Design speed on the four, six and eight lane highways is 60 m.p.h. within the city and 70 m.p.h. outside. The cost—nearly one billion dollars.

Baltimore has a 23-year master plan for beating its traffic problem. The 6-mi. Jones Falls Expressway is part of the plan and will cost $17 million.

$1 Billion Plan for L. A.

Los Angeles, fastest growing city in the U. S., has more vehicles per capita than any other city—388 per 1,000 inhabitants, compared to Chicago's 175 and New York City's 141. The city's master plan includes 613 mi. of expressways. A minimum construction program for the next 10 years calls for 310 mi. more of new expressways at an estimated cost of over $1 billion. Completed segments—Hollywood Parkway and Arroyo Seco Parkway—are already overcrowded. Although the expressway system would amount to about 1% of the city's street mileage, it would carry as much as 50% of the traffic, when completed.

West Virginia has unveiled a $46-million thoroughfare plan for Charleston with a built-in expressway. Surveys reveal that traffic within the city travels only slightly more than a mile and that short trips taken there were twice as many as taken by residents in other U. S. cities of comparable size. Also, although travelers passing through other cities constitute up to 50% of the traffic load, they were only 4% of the total in Charleston.

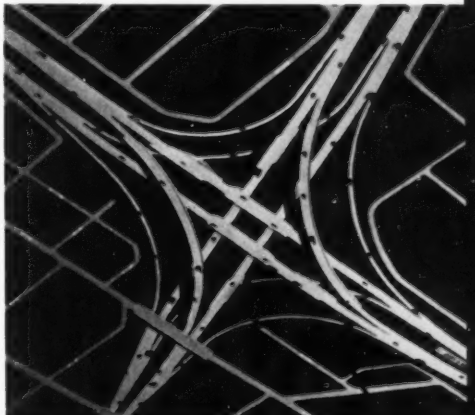
Other Cities Complete Work

Portland, Oklahoma City, Houston, San Antonio, Pittsburgh, and Atlanta, Ga. all expected to complete multi-million dollar projects this past year. Washington, D. C., has a $198-million plan for expressways.

These and other cities have turned increasingly to expressways as their economic justification becomes obvious. As traffic swells on narrow streets, the painfulness of cutting new routes must be faced. Many are finding the answer in these superhighways weaving above or below the city's turmoil. The fantastic elevated ribbons of concrete, which popular science magazines once pictured wending freely through a maze of city skyscrapers, are coming true.

New York City's Henry Hudson Parkway.

Davison Limited Highway in Detroit is depressed. Cross streets pass overhead.



This weird pattern is a drawing of the complex interchange in Detroit where the Lodge and Ford Expressways cross.

San Antonio's new freeway system.

A.A.S.H.O. Asks $800 Million Federal Aid

• Highway Officials Want Federal Gas Taxes Returned to States

» THE American Association of State Highway Officials last month launched a renewed drive for greatly increased federal aid for highways. In a formal resolution, the organization asked Congress to boost federal funds to the amount collected by the federal government in gasoline taxes.

In seeking the $800 million which will flow into the national treasury this year from gasoline taxes, the state highway officials deplored diversion of highway funds and labeled the procedure "a violation of the principle of anti-diversion recognized by all highway authorities as a basis for equitability in the field of highway finance."

The association has previously asked that the federal government leave the field of road user taxes (which yielded $2 billion last year) to the states. This is the first official action to recapture some of those funds via the federal aid route. Increasing resentment over federal collection of highway taxes and their diversion to other uses is being expressed these days as states feel the need for new road construction.

The annual meeting of the A.A.S.H.O. also heard B. D. Tallamy, 1952 president, predict that, while officials must view their highway programs in the future with the prospect of recurring shortages of manpower and materials, there are indications that the next few years hold "a brighter prospect for adequate highway programs than we have known since the depression."

Mr. Ziegler

Mr. Tallamy advocated a Congressional survey of the whole highway financing picture, including re-evaluation of the federal government's role of collector of highway user taxes. He told the highway officials that they must consider toll road financing as "a salient feature" today. "It must be reckoned with in all future highway planning," he declared.

Senator Spessard L. Holland, chairman of the Senate Subcommittee on Roads, warned that the nation is "losing rather than gaining ground" in its program of modernizing the highway system. "We are failing to keep up with obsolescence and are making insufficient progress with new construction to meet the increasing demands upon the highway system," he declared. This is happening despite the fact that the critical importance of highways is recognized.

New officers of the A.A.S.H.O. are President C. M. Ziegler, commissioner of the Michigan State Highway Department, and First Vice President A. E. Johnson, chief engineer of the Arkansas State Highway Department.

Partial Payments Survey

The Associated General Contractors of America, in response to repeated requests for such information, has completed a survey of state highway departments to determine their policies on making partial payments. The study follows in table form below.

State Highway Dept. Practices on Paying Partial Construction Estimates

State	Normal Frequency of Payments	Retained Percentage in Paying Partial Estimates	With Partial Estimate Payments Does State Pay for Stockpiled Materials*
Ala.	Monthly	Normally 7½%	Approx. costs of struc. steel & pilings. 85% F. O. B. cost of aggregates
Ariz.	Monthly	Normally 10%, may be reduced	Yes, but details lacking
Ark.	Monthly [1]	10% on all progress estimates	Partial payment on steel products delivered far ahead of scheduled use
Calif.	Monthly	Normally 10%	90% of value material delivered
Colo.	Monthly [2]	Normally 10%; 5% after job is 50% completed satisfactorily	Actual cost under certain conditions
Conn.	Monthly	Normally 10%	Up to cost of steel products
Del.	Monthly [2]	10%; sliding scale planned	Up to 90%, varying with progress
Fla.	Monthly	10% but not more than 5% of contract	50% of certain items named in specs.
Ga.	Monthly	Normally 10%	Up to invoice price plus freight, varying with quantity
Idaho	Monthly	Normally 5%	50% if contract value over $1,000
Ill.	Monthly [1]	Normally 10%	If work is suspended or for preconstruction stockpiling
Ind.	Bi-weekly	Normally 10%	No
Iowa	Monthly [2]	Normally 10%	Yes
Kans.	Monthly	Normally 10%	By special agreement for struc. & reinforc. steel
Ky.	Monthly	Normally 10%	60% of value of fabricated steel
La.	Monthly	Normally 10%	60% (by invoice wt.) for some steel items properly stored
Maine	Monthly [2]	Normally 12½%, may be reduced	Permitted but seldom done
Md.	Monthly	Normally 10%	Normally no. Exception possible
Mass.	Semi-monthly	Normally 15%	Up to 70% of contract unit price or 80% of invoice, whichever less

State	Normal Frequency of Payments	Retained Percentage in Paying Partial Estimates	With Partial Estimate Payments Does State Pay for Stockpiled Materials*
Mich.	Bi-weekly	Normally 10%; may be 5% or less when job 50% complete	75% for bridge steel, up to cost for road materials
Minn.	Monthly	Normally 10%; full partial payments possible after 50% of contract	Full payment if material properly stored
Miss.	Monthly	Normally 10%	In some cases actual cost less 10% allowed by suppl. agreement for stockpiling critical materials
Mo.	Monthly [3]	Normally 10%. On completion up to 70% of retainage may be released	Up to 90% of cost for materials properly stored
Mont.	Monthly	Normally 10%, but not more than 5% of contract price	Generally no. Partial payment may be made upon request
Nebr.	Monthly [4]	Normally 10%	Normally limited to reinforc. and struc. steel
Nev.	Monthly	10% until 50% completed, then full estimates paid	Actual cost of materials
N. H.	Semi-monthly	Normally 10%	Approx. cost to contractor
N. J.	Monthly	Normally 10%	80% of value of most materials
N. Mex.	Monthly	15%	From 50% to 75% of unit bid price for aggregate and road material. 50% of unit bid price for struc. steel
N. Y.	Semi-monthly possible	20% if contractor not bonded, 10% if bonded	Most materials up to 85% of invoice cost, but only 75% for struc. steel. Engineer's written approval needed prior to purchase.
N. C.	Monthly	10% until 50% completed, then 5%	Up to 75% of cost if properly stored, excl. temp. struc. materials
N. Dak.	Monthly	Normally 10%	50% of contract unit price
Ohio	Monthly [5]	15% until 50% completed; then 15% of balance of work	Cost of material accepted and properly stored
Okla.	Monthly [6]	Normally 10%	60% of contract unit price of struc. steel; 50% of contract price for concrete piles cast; 90% of value of other materials when value exceeds $10,000
Oreg.	Monthly	10% until 75% completed, then estimates paid in full	90% of net cost of materials
Pa.	Monthly & semi-monthly	10% up to 95% of completion, then twice cost of completion plus 2%	65% of contract unit price of struc. steel
R. I.	Bi-weekly	Normally 10%, less permissible	80% of value only when requested by contractor
S. C.	Monthly	Normally 10%	50% of contract unit price of struc. steel
S. Dak.	Monthly	Normally 10%	Up to 75% of cost
Tenn.	Monthly	Normally 10%	50% of contract price of steel and concrete piles cast for job
Texas	Monthly	Normally 10%	75% of value of reinforc. steel, struc. steel, stone, gravel, sand, cement, paving brick
Utah	Monthly	Normally 10%	Up to 75% of unit bid price of materials properly stored
Vt.	Bi-weekly	15%	During period of shortages may pay up to 2/3 of unit contract price on critical materials
Va.	Monthly	Normally 10%	65% for struc. steel and stockpiled aggregate if commercial. 50% if stone aggregate produced by contractor on job
Wash.	Monthly	15% on estimates up to $200,000; 10% on larger	Up to 90% of cost to contractor
W. Va.	Monthly [7]	Normally 10%	Up to amount not exceeding actual cost to contractor
Wis.	At least monthly	15% until 50% complete, then 7½% of original contract	Yes, with usual retained percentage
Wyo.	Monthly	Normally 10%	90% of contractor's cost of steel and aggregate
Dist. of Col.	Monthly	Normally 10%. But after 50% complete, may request full payment on estimates	Not on paving, but occasionally on bridge work
Hawaii	Monthly	Normally 10%	Up to 60% cost to contractor
Puerto Rico	Monthly [2]	Normally 10%	Up to 75% cost to contractor

* In most cases, paid invoices or other proof of payment by the contractor must be submitted.

[1] Semi-monthly permissible

[2] More frequently permissible

[3] With over $25,000 of completed work monthly, semi-monthly payments permissible

[4] Semi-monthly on concrete paving jobs

[5] Semi-monthly when amount earned exceeds $1,000

[6] Semi-monthly on large jobs

[7] Semi-monthly if current estimate over $10,000

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Here's help... where and when you need it... with your International Industrial Distributor's ready service and parts departments

Your crawler tractors have to pay off with more work done per day, more days worked per year.

That means speed and power. The ability to stay on the job. Minimum downtime.

And it also means fast maintenance service at your call, when and where you need it.

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TRAINED "DIESEL DOCTORS"—factory-trained specialists in maintenance and overhaul.

PROMPT FIELD SERVICE at your job site to help keep your equipment working, to get it back to work faster, to cut costly downtime on the spot.

COMPLETE SHOP FACILITIES for major work—you're never far from an International Distributor's shop, no matter where your equipment goes.

QUICK PARTS SUPPLY from your distributor's fully stocked parts department, backed by International Harvester's network of strategically located parts depots (in size and scope, exclusive in the industry).

Isn't this *complete* service a mighty good reason to get International *"Power that Pays"* for the hard-working years ahead?

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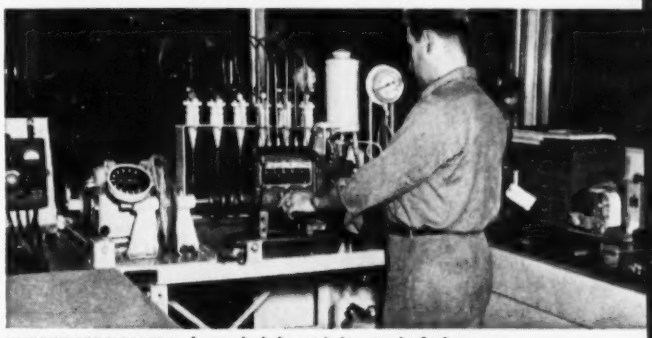

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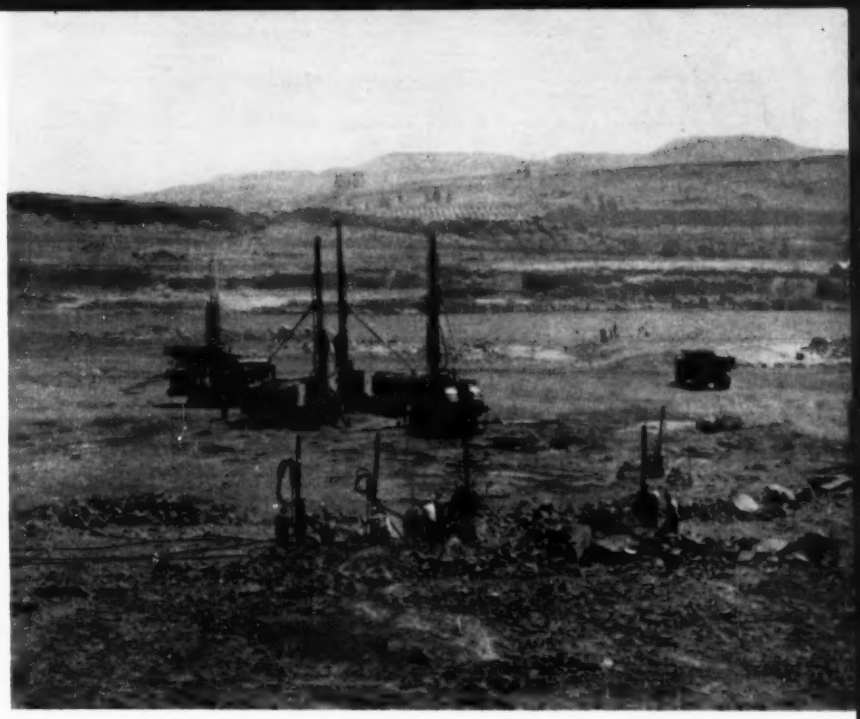


Joy wagon drills and Ingersoll-Rand Quarrymasters working on the site of The Dalles Dam. This is part of an army of heavy equipment utilized on the job by the S. A. Healey Co.

Big Machines Tackle Rock Job on The Dalles

» HEAVY equipment became the order of the day when work began this season on the foundation site of The Dalles Dam—$350-million project on the Columbia River.

There, the 1,500-mi.-long Columbia narrows and curves, forcing a strong current to seek exit through a passage less than a mile wide and some 180 ft. deep. Additional pressures from Pacific Ocean tides churn and boil the water over the barren construction site.

Another natural obstacle—the one which necessitated the use of such large equipment—was the heavy black basalt foundation to be pierced. One million cu. yds. of this material had to be blasted and removed from the site. The contractor—the S. A. Healey Co., A.G.C., White Plains, N. Y.—attacked this thick, hard crust with heavy-duty Ingersoll-Rand Quarrymaster and Joy Champion drills. These were aided by wagon drills, marshalled on the job in strength. Bucyrus-Erie 120-B and Marion 4161 electric shovels brought the contractor's equipment force to eye-opening proportions.

To beat a production schedule of 10,000 cu. yds. per two-shift working day, fleets of 14-yd., rear-end dump Euclids were run almost continuously. Extensive underwater blasting was made possible with heavy drill equipment working from barges and the material was pulled out for loading by a Marion 4161 with 6-cu. yd. bucket.

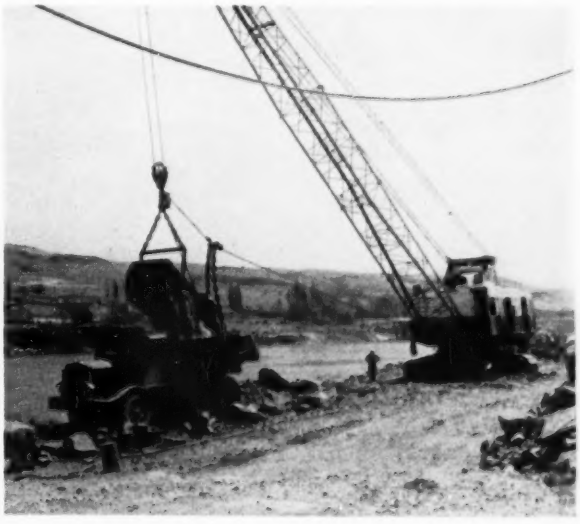
Often, an average boulder taken from a blast filled the bucket. Three shovel passes filled a 14-yd. Euclid. The basalt was so hard that after blasting, crews often had to tackle the foundation layers with jack hammers. The jagged rock would have cut a loaded truck's tires to ribbons in one trip if the contractor had not surfaced haul routes with light gravel fill. The same material was used for fill upon which the wagon drills could operate.

The Healey firm, although well-known in the East, was new to western construction areas. When it was awarded the $4.9 million contract for initial powerhouse and cellular cofferdam foundations, it came West ready for the difficult assignment.

The powerhouse, when completed, will be the longest of any in the world. It will be as high as a 12-story building and cover an area equal to about seven football fields.

A Bucyrus-Erie electric shovel strains at the huge black basalt rock blasted out on foundation site of dam.

Rock loosened by underwater blasting is dragged from the Columbia River by a big Marion 4161.



U. S. Needs 10,058 New Disposal Plants to Keep Streams Clean

- Big Cities and Industries Worsen Wastes Problem
- $19-Billion Construction Goal Urged by Officials

» ONE of the problems which have followed the unprecedented industrial expansion since the war and the mass population movement to the cities is the problem of wastes disposal.

Cities are built upon important waterways because water is so necessary for both the inhabitants and the industries. Although populations grow and industries increase, the water supply remains constant. Not only does the supply not increase, but its quality becomes impaired as the new industrial wastes and increased municipal sewerage are dumped without treatment into the stream.

Sometimes, the water cannot be utilized at all, and when it can, it is only after costly treatment to purify it. Many once-clean rivers have become open sewers during the last few years, valueless to the cities and enterprises along their banks. The problem is wide-spread throughout the United States.

The President's Water Resources Policy Commission recently bared the problem in candid terms:

"Polluted water threatens life and health, blocks the expansion of industry and increases the cost of its products. It robs use of recreation and vacation areas, which once lost can be reclaimed only at great expense, and destroys our sports—fishing, swimming and bathing. It forces us to spend large sums of money for elaborate water supply systems reaching hundreds of miles into the mountains and for expansive water purification works. It impairs the value of our property, poisons our shellfish food, kills our fish, birds and other wild-life, damages our boats, ships, piers and waterfront structures."

Just how deep-seated the water pollution problem has become the U. S. Public Health Service has revealed on the basis of a survey authorized by Congress. The agency reports that *new facilities* are needed by 31 million population that now have none and that *additions* are needed to meet growing needs in communities totaling 29 million people. The known industrial load is equivalent to that of a population of 50 million people and the estimated load of unsurveyed industries is equal to that of another 40 million people. Thus, on a population basis, the total load for which new facilities are needed is equal to that of 150 million people.

Public officials have turned to the construction industry as in other instances where only a spurt of building could offset a mounting problem. Translated into terms which contractors can readily understand, the backlog of needed facilities would reach over 10,000 units, the Public Health Service finds.

Tremendous Effort Required

Defining the problem further, Carl E. Schwob, federal pollution control chief, declared recently before public works officials in Los Angeles that from $9 billion to $12 billion should be spent on the construction of sewage disposal facilities in the next 10 years. He warned that the "tremendous backlog" of this type of public work must be reduced through increased planning and building.

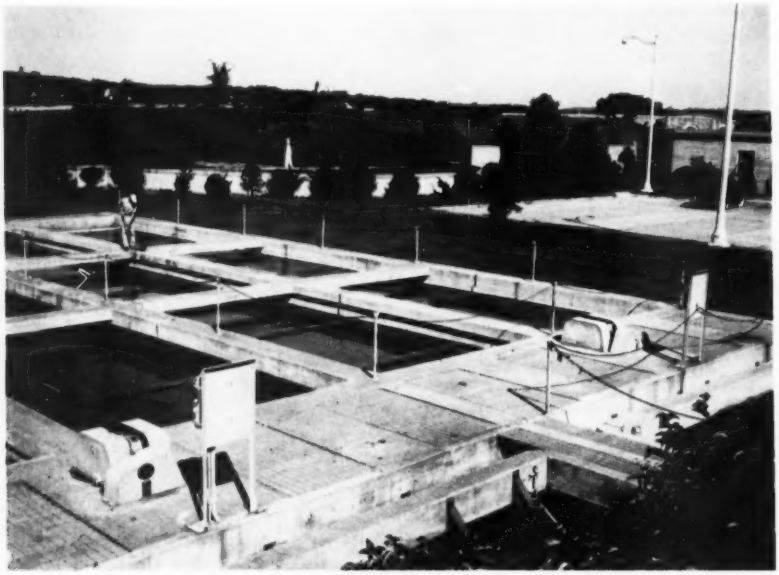
"An adequate and continuing supply of usable water is imperative if our country is to maintain its existence as a highly industrialized and urbanized nation. The need can be met only if we move rapidly enough in the construction of waste treatment plants to prevent further pollution of our priceless water resources.

"We are not moving rapidly enough today. A 10-year program at three times the 1951 rate of construction will just about bring us abreast. It is obvious that we are going to have to speed up."

25 Years from Now

In addition to the formidable backlog of 10,058 new disposal plants or additions which Mr. Schwob is concerned about, there is an impending future need which can hardly be estimated but which must be planned for. Some hint of how large that market will be can be determined from predictions of the Paley Commission. That group estimates that by 1975, industrial production in America will be double that of 1950. Population is expected to increase to between 190 and 200 million by 1975. Water requirements are estimated to increase from today's 185 billions of gallons per day to 350 billions of gallons in 1975.

In the face of the unprecedented need for this type of construction now



Whereas the District of Columbia plant, a part of which is pictured on the facing page, may be considered a fairly large plant (it serves 900,000 population), the Pentagon plant, built to serve 50,000, may be typical of the smaller units. Settling tanks above are part of the project built by Carlson Bros. of Michigan for an estimated $1.5 million.

and within the foreseeable future, one may well question progress being made in 1952.

Here, the concern expressed by public health officials becomes understandable. Funds allocated for water pollution control by many states are still inadequate. Of the 53 states and territories, five made no specific appropriation for work of this kind this year; 14 appropriated less than $15,000; and 25 less than $30,000. Thirteen states accounted for 75% of the total funds provided by the states.

Little Federal Aid Given

Lack of continued federal assistance during the current year has retarded the work in some states. Although Congress passed a Water Pollution Control Act in 1946 and authorized $135 million to carry out the five-year program, only $8.4 million has actually been appropriated. Of that amount $5.4 million was for Public Health Service activities.

Mr. Schwob asserts, "Although the Congress intended the extension of federal credit to stimulate local communities in the planning and construction of local treatment works, no funds have been appropriated for that purpose."

Water pollution control officials are encouraged, however, by the support which states are volunteering in this field. Federal participation in pollution control is stringently limited today—both in respect to financial aid, planning and enforcement of policy. It is Mr. Schwob's opinion that "the best way to handle the task is to maintain primary responsibility in the hands of the states."

States Take Action

Supporting that contention is the trend toward new or more stringent pollution abatement laws among state legislatures. Laws will be sought this year to make it easier for cities to finance disposal plants. Some legislators will consider giving tax exemption benefits to industries for money spent on such construction. Here is what some states are doing:

• Since formation of a pollution control policy in California, there have been 75 successful bond elections for sewerage facilities. Contracts let for construction of such facilities has reached $61.5 million.

• Wisconsin recently issued deadlines for 61 municipalities and industries to provide facilities to stop pollution of the Milwaukee and Black rivers.

• Connecticut may take court action against five cities if they don't take immediate steps to construct sewage treatment plants.

• Eighteen Kansas towns have just completed disposal plants and 14 others are planning such projects.

• $6.5 million has been approved for the cofferdam stage of Chicago's $85-million filtration plant program.

• Detroit has plans for a $65.5 million program of sewage construction.

• New Jersey will see a $22.5-million sewer system installed shortly to serve several congested communities. This ambitious undertaking includes a main trunk sewer for $8,950,000, a treatment plant for $4,250,000, an outfall for $4,100,000, an interceptor for $890,000 a main pumping station for $990,000, and contributors for $830,000. Other features of the multi-million project are $600,000 for administration, legal fees and rights-of-way, $500,000 for reserve, $550,000 for net interest during construction, and $800,000 for purchase of existing plants.

• Oregon municipalities have spent $17.5 million for construction of disposal facilities since 1946 and plan to expend $3 million more this year.

• Pennsylvania has been praised for instituting an exemplary program in 1944 and since then has constructed $150 million worth of new facilities.

• Rhode Island, in recent years, has authorized $23 million for new plants. At present, four more are under construction and six are being surveyed.

Four new settling basins, part of a recently completed $1.4 million addition to the District of Columbia sewage disposal plant, typify the construction needed in this field. Progressive Builders, Inc., of Pennsauken, N. J., did the work. Since then, another step in the District's $11-million program has been taken with award of another $1.4-million contract to Chas. H. Tompkins Co., A.G.C., of Washington, D. C., for a building to house a new sludge disposal unit.

The largest cities throughout the nation have been wrestling with pollution problems for years and efforts to keep up with population influxes have led to multi-million dollar programs. New York City has a $107-million master plan on which construction is progressing as scheduled. In 1951, work completed amounted to $22,670,000. One plant, approved for critical materials recently, will cost $23 million.

Richmond, Va., has engineering plans under consideration for a $16-million sewage disposal program. The state is forcing the city to cease pollution of the James River.

In Cleveland, contracts totaling $2 million have recently been completed and a bid of $2,127,000 accepted for more construction work on disposal plants. Being voted on this month are bond issues of $7 million for sewers and $6 million for sewerage disposal construction.

A recent compilation of contract awards reveal that during the first three quarters of 1952, construction of 416 new plants or additions was undertaken. The cost has been estimated at about $112 million.

This rate of construction is still far from the acceleration needed, the Public Health Service finds. Neither

Economy Idea—Concreting in the Air

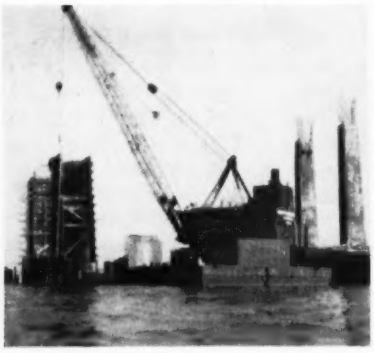
Top: a series of approach piers for the bridge indicates the similarity in dimensions of these visible portions of the substructure. This permits effective use of prefabricated, portable concreting forms, such as those in place at center of photo, which can be used over and over again.

Left: a huge, four-sided, 16-ton, 20-ft. section of concreting form is being hoisted aboard a Merritt-Chapman & Scott barge for use in building pier shafts in mid-river. After the concrete has set, the form is carefully lifted clear and moved to another pier, with a considerable saving in time.

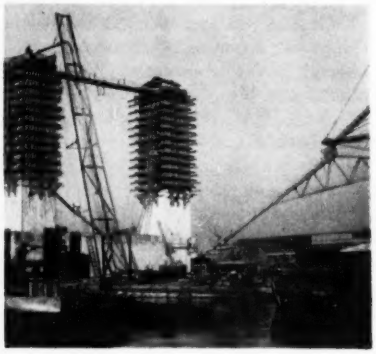
» CONSTRUCTION of bridge foundation often involves the problem of performing the same concreting job on pier after pier, but at varying heights afloat and ashore. To do the job more efficiently, Merritt-Chapman & Scott, A.G.C., New York, capitalized on techniques shown in these pictures while building the piers of the substructure for the John E. Mathews Bridge at Jacksonville, Fla.

Pictures courtesy of *Black Horse News*

Below: the Derrick Cheyenne is lowering into position a 40-ft. shaft section form. The concrete columns to the right of the derrick were poured in forms similar to the one being put in place. Concrete for the columns was pumped into place as another means of speeding up operations.



Below: the steel A-frame structure between the pier columns has a pipe running up its center through which concrete is pressure pumped into the forms at heights up to 95 ft. The technique makes it unnecessary to bring an extra rig into play to hoist all concrete on such high pours by bucket.



(Continued from page 53)

the backlog of over 10,000 plants nor the steadily growing demands of the future are likely to be met at the volume of current efforts. Officials report that availability of materials is encouraging planning of projects for 1953, however.

The President's Water Resources Policy Commission has urged that Congress "should increase the present inadequate appropriations for loans to municipalities and others to enable them to construct the necessary sewage and waste treatment facilities."

The other recent independent study of this problem reached a similar conclusion. The President's Materials Policy Commission had this to say:

"As to loans for construction and grants for construction plants, the commission recognizes the need for more construction of pollution abatement projects, but it notes that these provisions of the act have not been applied. Not only has Congress failed to appropriate funds, but there is a question whether municipal governments would have found them of much practical use since the act limits each loan to one-third of cost with a ceiling of $250,000. These provisions should be thoroughly re-examined by Congress, and its consideration should include inquiry into the desirability of extending construction loans and grants to private industries as well as municipalities."

While increased federal aid may stimulate this type of construction, the attitude of Congress in passing the 1946 act was that the cities and industries which create the pollution are responsible for providing the remedies. A look around the country reveals that in some areas, the pollution problem is attacked by interstate authorities; elsewhere, strong corrective measures are initiated by state governments; and in other instances, cities face the problem by themselves.

Regardless of how the final responsibility is defined and financial aid determined, cities, states, the federal government and the nation's industries must turn eventually to the construction industry for the new facilities which can restore rivers and streams to their original cleanliness.

New Joint Committee to Meet

The first meeting of the recently formed joint cooperative committee of the American Public Works Association and The Associated General Contractors of America will be held in Chicago's Drake Hotel on January 28, the A.G.C. reports.

...and we're grateful

Thanks to you, we've just completed a wonderful, successful year, our sixtieth. Naturally, we're proud of this proof that Hyatt Roller Bearings have earned the confidence of so many leading manufacturers of all kinds of equipment. In the year ahead we will have the advantage of enlarged plants and new, additional facilities to help us fill the continually expanding demand for Hyatt quality bearings. We're grateful for your valued business of the past year and will be looking forward to serving you again in 1953 along with many new Hyatt users. Hyatt Bearings Division, General Motors Corporation, Harrison, New Jersey, Chicago, Detroit, Pittsburgh, Oakland, California.

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Productive work-time is increased because mobile, rubber-tired 16-E works over pavement without planking, makes self-powered moves job-to-job at 6 m.p.h. Get more facts from your Koehring distributor, or write for literature.

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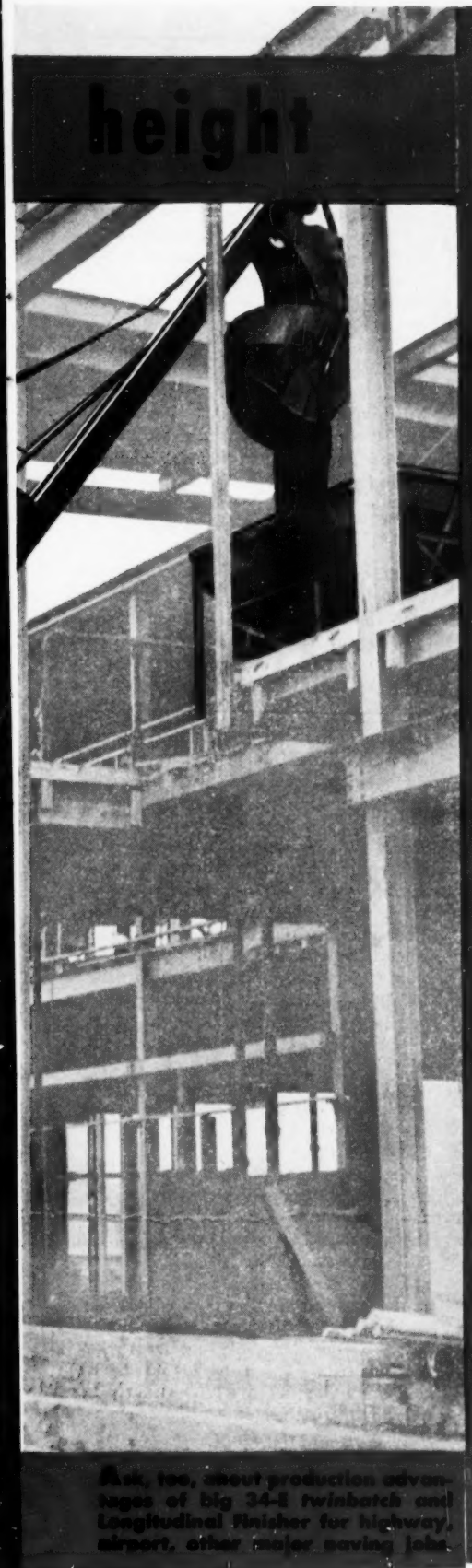
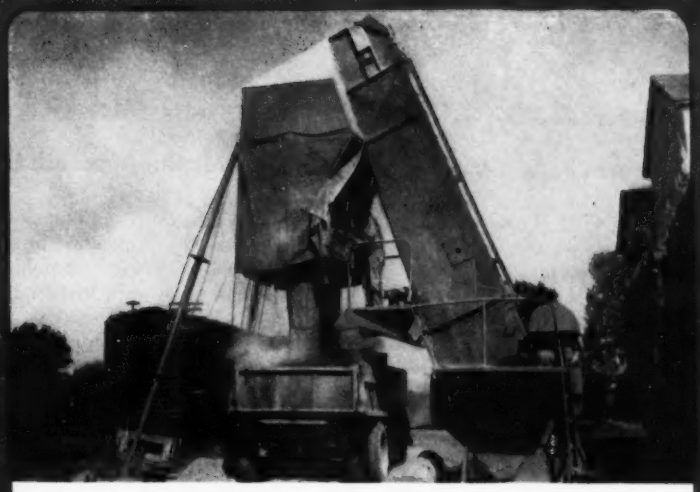


Ask, too, about production advantages of big 34-E *twinbatch* and Longitudinal Finisher for highway, airport, other major paving jobs.



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. . . For batching, Johnson Elevating Cement Charger has a size 14, 1000-lb. capacity cement weigh batcher, hung under a 33-bbl. overhead storage hopper . . . or, for charging dual-batch trucks, two 1000-lb. weigh batchers can be used. It's quickly adapted to transfer plant by removing batchers and batcher cone, and bolting a 50-bbl. extension section to hopper. Charger is easily moved, erected by dump truck, no crane needed. See your Johnson distributor, too, for mix plants, buckets, bins, elevators, batchers, silos.

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X48

Revised A. G. C. Safety Manual Published

- Few Changes Made in 1952 Edition; Practical Approach Used

» THE FOURTH revised edition of *The Manual of Accident Prevention in Construction,* official safety manual of the A.G.C., was published last month with minor changes over the last revised edition of 1949.

"No deviation has been made from previous editions with respect to the practical and common sense approach to the subject of accident prevention," the preface states. "The same sequence of subject matter has been observed although new sections have been added."

Greatest revision was made in Section 5, dealing with "Arc Welding," and Section 6, on "Gas Welding and Cutting." Besides being reversed in the order of importance in which they appeared in 1949, they were shortened a little and generally rewritten, with more emphasis on welding.

Formerly the arc welding section was referred to as electric welding and the gas welding and cutting chapter was titled oxygen, acetylene and hydrogen.

The book's introduction stresses the high cost of construction accidents and it states "Total volume of construction—new, maintenance and repair—totaled approximately $39 billion in 1951. Applying a 35% factor for direct labor costs, 1951 payrolls aggregated $13.6 billion. On the basis of a national average compensation-insurance rate of $3 per $100 of payroll, the nationwide compensation insurance costs amounted to $409 million. With the conservative addition of direct-job costs (job stoppages, equipment damage, spoiled work, loss of manpower, etc.) of $819 million, it is clear that construction accidents cost $1.3 billion in 1951.

"If one half of the accidents might be prevented by common sense, practical means, as has been proven possible, a saving of no less than $614 million would result, in addition to the benefits derived from improved conditions, avoidance of suffering, and conserved manpower."

The manual, first published in 1927 by the A.G.C., had its first revision in 1930, a second revision in 1938 and a third revision in 1949. It was recently accepted as an American Standard by the American Standards Association.

Price of the manual remains the same at $3 per copy, $30 per dozen and $210 per hundred.

As before, sections of the manual have been reprinted in 14 pocket-sized booklets designed for use on the job by superintendents, foremen and workmen. The 4 x 6 in. reprints will continue to sell for 10¢ each.

A. G. C. of Missouri Directs Safety Plan

» THE A.G.C. of Missouri is in the middle of an accident prevention campaign which it hopes in the next two or three years will materially reduce accident rates in the state's construction industry.

Robert M. Hoover, vice president of the chapter and chairman of its accident prevention committee, discussed the organization of the campaign before the construction section at the recent 40th Safety Congress.

He told listeners that last March Chapter President Frank E. Rolfe, Kansas City, recognized the need for a vigorous safety program and named Mr. Hoover to head it.

The first problem was to interest member firms of the importance of the program. This was done by a letter written to appeal to their motives of humanity, greed and fear. The humanity angle stressed the saving of lives; the greed approach stressed money saved when no accidents are committed and the fear told of threatening government intervention with safety legislation if the accident rate continues to increase.

After this, the committee began to put forth its program which contained 8 major points, as follows:

1. To study and use, insofar as possible, the best phases of the national A.G.C. and its chapters' accident prevention programs.

2. Strongly encourage good housekeeping, because one-third of injuries result from slips and falls which are caused largely by poor housekeeping.

3. Procurement and distribution of safety signs on the job showing the number of days since the last lost-time accident. A set of these signs cost $22.50 and by October the chapter had sold 70 signs to members.

The committee reasoned that if 10% of the workers took pride in the record on display every time they came to work, the signs would pay for themselves several times over.

4. Procurement and distribution of safety cards, 2¼" x 3", carrying a short safety message and attached to each man's pay check. The committee ordered 24,000 of the cards in the first printing and so far has sold over 7 times that number.

Pointing out that steps 3 and 4 are directed at safety consciousness, the other half of the problem is to teach the worker how to prevent accidents. Therefore,

5. Each member of the chapter given set of pocket-size national A.G.C. Safety Manuals and a form for ordering additional copies for distribution to superintendents and foremen. Cost per manual when ordered in bulk is less than 10 cents each. To date more than 2,000 have been sold to members.

6. Work for healthy competition by the men for prizes for the safest records. To establish competition on the member level a free membership in the national A.G.C. was to be awarded to members in various divisions for the lowest accident rate.

For foremen and superintendents of member firms a $50 prize was to be given for the best suggested form for "Foreman's Report of Accident." The committee reasoned that this would familiarize the men with existing forms, give them a pride of authorship and perhaps diminish the feeling that here was another "form from the front office" which must be filled out. The committee also recommended offering a prize of $100 for the best safety suggestion of the year from employees of member firms.

7. Sponsorship by the chapter of an accident prevention conference for foremen, superintendents and executive personnel of members on a periodical and sectional basis. Mr. Hoover said that the first such conference will probably occur in April.

8. Publicize the plan to the local offices of the Corps of Engineers, the Missouri State Highway Department, to principal cities and make it available to desiring customers of any member firms. This, it was reasoned, would gain the support and cooperation of clients and leave them with a feeling that member firms are doing all they can to handle their work in the safest possible manner.

Safer Use of Salamanders

Each year salamanders cause serious injuries to construction workers who either neglect the apparatuses or fail to understand the hazards involved.

Realizing this, the National Safety Council recently published a list of "do's" and "don't's" involving them.

The council cautioned against use of water as a fire extinguisher where oil salamanders are being used. Though most people know that water only spreads oil fires, the practice of using water barrels as fire protection still exists. Suggested in place of water is the portable CO_2 extinguisher. Also, the extinguisher should be kept outside the area being heated, for the equipment is useless if the fire prevents the user from reaching it.

Oil Burning Salamanders

Oil burning salamanders should be used with the following precautions:

Don't light burner when the damper is closed.

Don't use oil that contains water, for it converts to steam pressure, resulting in oil boiling over or being forced into the stack.

Never refill while the salamander is burning. Fresh oil coming into contact with hot metal gasifies, usually exploding.

Never move salamanders while they are burning. The oil may spill and ignite surrounding area.

Don't relight immediately after extinguishing. Oil which is still hot produces gas filling the bowl and stack and may explode.

Never look down into stack when lighting. Ignited gas in stack might flame up.

Incomplete burning of oils in salamanders produces deadly carbon monoxide gas which is invisible and odorless. An exhaust system should be provided for burners in closed areas.

Where salamanders are used on a large scale, tests should be made to determine presence of gases. In smaller jobs, fresh air should be circulating in heated areas.

On jobs calling for single employees, such as watchmen, give illustrations to them to go out into the fresh air if they feel tired or sleepy.

In summation, the use of salamanders presents an inherent hazard that requires careful supervision by management and the avoidance of unnecessary exposure by the workers.

Indirect Cost of Accidents

The accidents: This case deals with a series of accidents occurring over a period of years. The dredging contractor concerned failed to recognize the importance of safety and his employees suffered frequent injuries which should not have happened.

- Falls on debris, tools, oil and ice littering the decks of dredges.
- Drownings, because workers ignored rule to wear life jackets.
- Infections, because no first aid equipment was provided workers.
- Falls from pipe line walks because handrails were not constructed.

Direct costs: Average annual cost to contractor in compensation and medical aid was $60,000.

Proximate results: In relation to the compensation insurance premium the direct accident cost was excessive. This resulted in a debit rate of over 40%, which made it necessary for the contractor to increase his bids by 1%. Thus he was at a disadvantage when bidding against competitors. In one year he lost several jobs by less than 1% on which he probably would have realized a profit of $200,000. He also paid more for insurance protection, additional costs due to depreciation and overhead maintenance of idle equipment.

Indirect cost: Estimated contractor lost $300,000 in one year.

Prevention: Practice good housekeeping on the job; make men wear life jackets when working over water; provide first aid equipment; construct proper handrails and you won't be at a disadvantage when you compete for bids.

Michigan Chapter of the A.G.C. recently joined with allied groups in Lansing to organize a long range safety program for the construction industry. Co-sponsored by the Lansing Building and Construction Trades Council, A. F. of L., the program may set a pattern on the national level. Representing the Michigan Chapter is George W. Combs, secretary-manager and H. L. Conrad, chairman of the accident prevention committee.

Safety is no Accident!

It's engineered into SAFWAY maintenance towers

Only Master Welders work on SAFWAY Equipment

Interchangeable parts constructed by safe, strong, lifetime welding of high carbon tubing.

All SAFWAY Equipment Treated with Rust Inhibitor

Maintains accurate fit of parts and fasteners to assure safe, rigid maintenance towers.

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Improves appearance of equipment—helps insure lasting fit of parts and long life.

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With only routine care, Safway equipment will deliver a lifetime of safe, efficient service.

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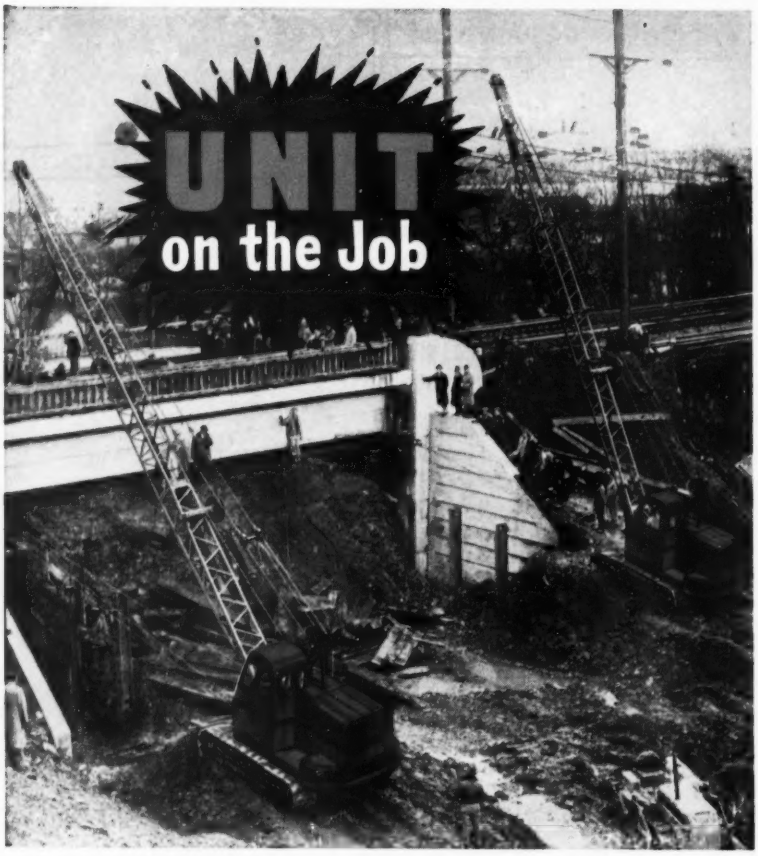

TEAMWORK and Accurate Control

Working as a team, these two UNIT 1020 Cranes moved a 500 TON railroad bridge from its temporary mounting to the new structure in a period of thirteen (13) minutes. This type of job calls for smooth and accurate control of boom and hoist line operation. UNIT'S extra long crawlers, multiple-hinged shoes, wide axles, and hook rollers provide perfect balance and stability. This, together with the FULL VISION CAB for complete visibility, makes UNIT the machine that is dependable and safe to handle efficiently any type of heavy-duty work.

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½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

ACCIDENT PREVENTION

S. C. Holds Safety Conference

Industry should take the initiative in accident prevention or expect government regulations to do the job, members attending South Carolina's 15th Annual Accident-Prevention Conference Nov. 12-13 were told.

The conference, attended by 500 delegates throughout the state, included programs of interest to every phase of industry.

The construction section met for the third straight year and heard safety talks by Homer H. Hunt, director of safety, South Atlantic Division, Corps of Engineers and Dale Medsker, area superintendent of the Safety Engineering Division, National Surety Corp., Atlanta.

Irwin Kahn, M. B. Kahn Constr. Co., A.G.C., Columbia, presided over the construction section meeting. He told delegates that he could not urge them too strongly to look into the matter of safety from the humanitarian standpoint and a money-saving proposition as well.

Sponsored by the South Carolina Industrial Commission, the Conference has the full support of the Carolinas Branch of the A.G.C.

Memphis Safety Campaign

Memphis Chapter, A.G.C., is conducting an accident prevention campaign among its members this year.

Participating contractors are furnishing the chapter office with weekly or monthly reports of total man-hours worked and the number of lost-time accidents during the year.

For the purpose of this campaign, the chapter defines a lost-time accident as "any personal injury received on the job which causes loss of time beyond that day, turn or shift during which the accident occurred."

At the end of the contest next June 30, three judges will check the records of the participating firms and divide them into three groups. The first group will include firms having up to 50,000 man-hours of exposure during the year. Group two will take in firms having from 50,000 to 150,000 man-hours of exposure and group three represents firms exceeding 150,000 man-hours of exposure.

The judges will then check the reports and determine which firms have the lowest frequency records and thus the winners in each group.

Whoo's from Missouri?

Construction men like to be shown!

. . . and whether your next concrete job is in Missouri or Mississippi . . . Montana or Minnesota, you'll *see* on these pages throughout this year how *air entrainment*—correctly used—can help you deliver concrete that's tailor made for your particular job . . . your particular location.

We've gone all across the country, and come back with a stack of stories telling how concrete men everywhere are using *correct* air entrainment to produce quality concrete every time . . . *every place*—in spite of local climatic extremes and the various complexities of the mix. In the coming months we will report the experiences of construction men who know the advantages of designing for particular conditions . . . and regulate the amount of air entrained in their concrete accordingly.

So keep your eye on Marquette's message every month, and you'll *see—wherever you are*—how simple it is . . . and how *sure!*

★ ★ ★

If you have any problems or questions on the use and mixing of air-entrained concrete, the Marquette Service Engineer will be glad to help and advise you—contact any Marquette office.

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SALES OFFICES: Chicago • St. Louis • Memphis • Jackson, Miss. • **PLANTS:** Oglesby, Ill. Des Moines, Ia. • Cape Girardeau, Mo. • Nashville, Tenn. • Cowan, Tenn. • Brandon, Miss.

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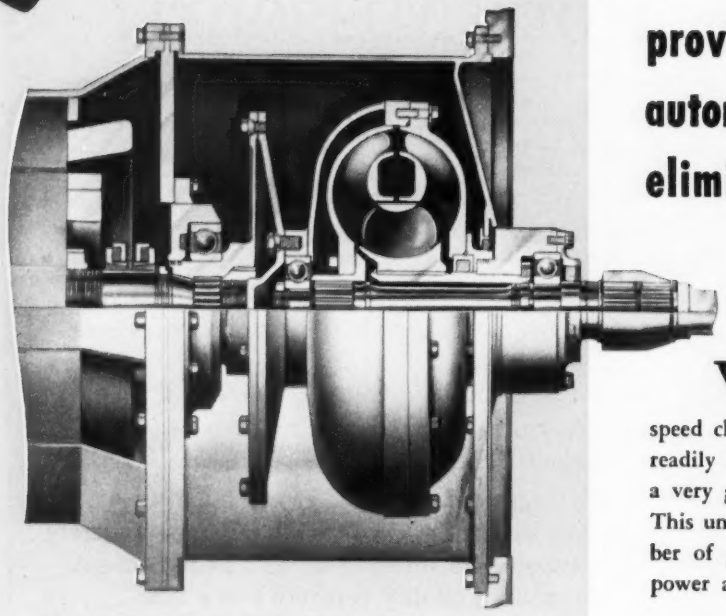
Marquette Cements

LeTourneau's low-pressure

provides infinite gear ratios automatically selected . . . plus elimination of shock loads



TORQUE CONVERTER is simple, trouble-free . . . has single impeller, turbine, reactor . . . operates at low pressures, does not depend on tight-fitting oil seals for efficiency.

NOTE: Same torque converter with constant-mesh transmission now available in C Tournapulls.

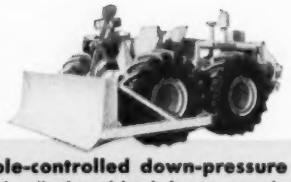
Where dozing conditions require frequent speed changes or where skilled operators may not be readily available, the LeTourneau torque converter is a very good investment for your new Tournatractor. This unit provides the equivalent of an infinite number of gear ratios, plus the use of maximum horsepower at all times over the complete speed range.

The LeTourneau torque converter is a low-pressure unit, simple and trouble-free. It has a single impeller, turbine and reaction member. Because it operates at low pressure, there is no difficulty in keeping the system sealed for efficient operation.

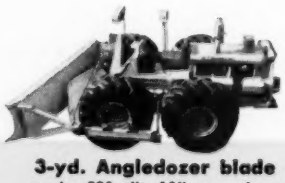
It smooths out the shock of changing gears. It automatically balances load and torque so that gear selection is much less critical and maximum efficiency is secured at all times by *all* your operators. It automatically balances the speed ratio to provide more power to handle a load which has become heavy . . . then as the load lightens, automatically raises the ratio to pick up speed. It improves performance in any type of difficult operation . . . increases accuracy in holding cuts to grade and in close finishing . . . helps synchronize dozer speed to scraper speed when push-loading.

See your LeTourneau Distributor for all the facts

Now available for Tournatractors



Cable-controlled down-pressure
easier digging of hard, frozen ground



3-yd. Angledozer blade
angles 20°, tilts 10" up or down

TORQUE CONVERTER

Le Tourneau TORQUE CONVERTER gives you these advantages:

1 **No shock or vibration** — shock loads of speed changes are absorbed in oil of torque converter and eliminated from transmission and power train.

2 **Better traction** — steady power pull gives tires a firm grip in tough footing . . . helps unit pull through slippery going easier and with smoother control.

3 **Longer tire life** — peak loads in tire acceleration are eliminated . . . you get less wear, longer, more economical service.

4 **Higher engine efficiency** — constant, even power reduces engine wear . . . eliminates lugging down . . . cuts repairs and maintenance . . . adds to engine life.

5 **Steady engine speed** — improves service and lengthens life of all engine attachments. Assures maximum voltage at all times for electrical equipment.

6 **Accurate grading** — perfect balance of torque against load assures less variation in "suction" on blade, easier control, and steadier dozing speed regardless of footing.

7 **Easier operation** — with automatic balance of speed range to grade and rolling resistance, new operators do better . . . veteran operators do it easier.

8 **More yards per hour** — use of maximum engine horsepower gives higher average speed, better operating efficiency.

Tournapull, Angledozer—Trademark Reg. U.S. Pat. Off.
Tournatractor—Trademark D-158-G

67,000-lb. winch and skidder
for towing logs, pipe, etc.

12'4" Plow, 9' electric wing
interchangeable with bulldozer blade

R. G. LeTOURNEAU, INC.
Peoria, Illinois

A.G.C. Convention to Examine 1953 Construction Prospects

- Contractors to Assess Effect of Changes Ahead
- Probable New Construction Peak Poses Problems

» THE CHANGING picture in the construction industry as greater latitude is given to civilian projects while the defense construction program is carried forward under a new national administration, will be examined closely at the 34th annual convention of the The Associated General Contractors of America in Miami, March 23-26.

With another record year probable, general contractors will also assess the task of maintaining a high volume of work. Key persons in the public, private and defense spheres of a construction program which may reach an estimated $44 billion in total construction in 1953, are expected to address the convention.

The South Florida Chapter, Miami, will be hosts for the meeting, with the chapters and branches in District 10—North and South Carolina, Florida, Georgia and Virginia—acting as co-sponsors. Convention headquarters and business sessions will be in Miami Bayfront Park Auditorium. There will be no headquarters hotel as such. Room accommodations have been obtained in hotels facing Bayfront Park along Biscayne Boulevard, across the street from the auditorium.

As a departure from previous annual conventions, general business sessions will be held in the morning only, leaving afternoons and evenings free for social events and recreation.

Frank J. Rooney, chairman of the general convention committee, said a distinctive program of outdoor recreation for the entire family has been planned to take advantage of the locale as a "winter playground."

The opening general convention session will be on Monday morning, March 23, with succeeding sessions on Wednesday and Thursday mornings. Tuesday morning will be devoted to meetings of the Building, Highway and Heavy and Railroad Divisions. A.G.C. committee meetings on Friday, Saturday and Sunday will precede the opening of the convention.

The Executive Committee will meet Saturday afternoon and the Governing and Advisory Board on Sunday morning, with a post-convention board meeting scheduled for Thursday afternoon. A general session of the Secretaries' Council has been set down for Saturday morning and the Building Section and the Highway and Heavy Section of the Council will hold sessions in the afternoon.

Recreation Program Planned

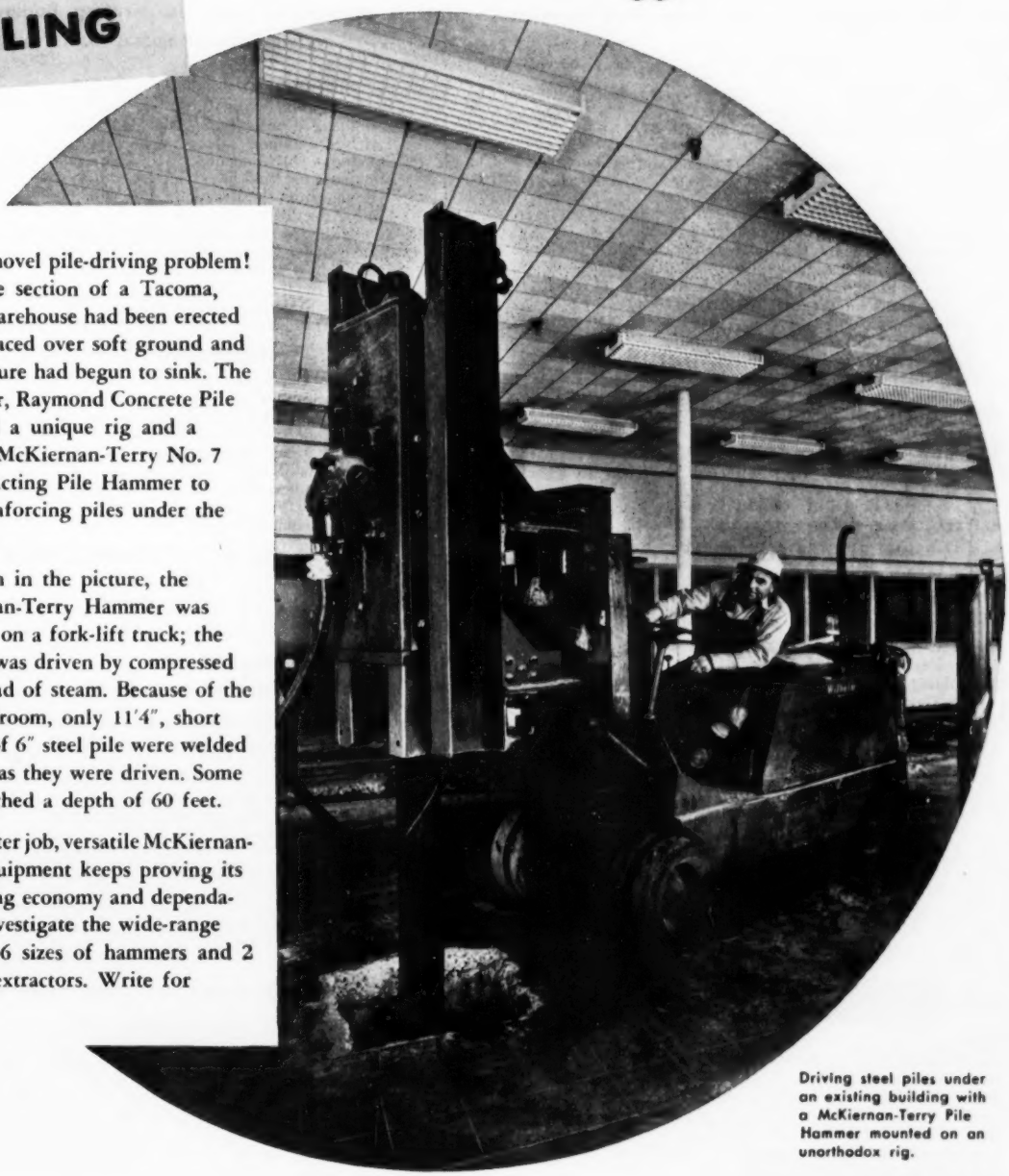
Meetings of joint cooperative committees which the A.G.C. maintains with the Associated Equipment Distributors and the Construction Industry Manufacturers Association will be held in conjunction with the convention.

Sunday evening will be "Welcome Night." Highlights of the recreation program include a golf tournament on Monday afternoon, a "Day at the Races" at Gulfstream Race Track on Tuesday afternoon and a day at Crandon Park on Wednesday afternoon. The annual banquet, as usual, will be the concluding event of the convention on Thursday evening.

Mrs. Frank J. Rooney and Mrs. M. R. Harrison, Jr., co-chairmen of ladies' activities, have extended a special invitation to members' wives to participate in the program.

On their recent tour of southern A.G.C. chapters and branches, A.G.C. President Arthur S. Horner, C. P. Street, 1953 presidential nominee, and Managing Director H. E. Foreman discussed plans and arrangements for the 1953 convention with the general committee. Seated, left to right, are Mr. Foreman; Mrs. Frank J. Rooney, co-chairman of ladies' activities; Mr. Horner; Mrs. M. R. Harrison, Jr., co-chairman of ladies' activities, and Mr. Street. Standing, in the same order, are Mr. Rooney, general chairman; Paul H. Hinds, executive manager of the host chapter; J. Robert Stobs, treasurer and chairman of the finance committee; Scott H. Braznell, Jr., chairman, entertainment; M. R. Harrison, Jr., president, South Florida Chapter; Joseph J. Orr, chairman, housing; Harold E. Kee, chairman, transportation and tours, and James M. Albert, chairman, publicity and public relations. Not shown was Perry E. Willits, chairman of sports, who was out of town.

HOW TO DRIVE PILING *Inside an Office!*



Here's a novel pile-driving problem! The office section of a Tacoma, Wash., warehouse had been erected on fill placed over soft ground and the structure had begun to sink. The contractor, Raymond Concrete Pile Co., used a unique rig and a versatile McKiernan-Terry No. 7 Double-Acting Pile Hammer to drive reinforcing piles under the building.

As shown in the picture, the McKiernan-Terry Hammer was mounted on a fork-lift truck; the hammer was driven by compressed air, instead of steam. Because of the low headroom, only 11'4", short sections of 6" steel pile were welded together as they were driven. Some piles reached a depth of 60 feet.

On job after job, versatile McKiernan-Terry equipment keeps proving its piledriving economy and dependability. Investigate the wide-range line of 16 sizes of hammers and 2 sizes of extractors. Write for bulletin.

Driving steel piles under an existing building with a McKiernan-Terry Pile Hammer mounted on an unorthodox rig.

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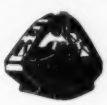
MEAD-MORRISON COAL AND ORE UNLOADERS AND BRIDGES
Available in a variety of designs and in capacities of 300 to 1500 tons per hour. Exceptional durability proven by installations in service for half a century. Simple controls afford convenient, comfortable and speedy operation.



GRAB BUCKETS
Range of types and sizes take bulk materials loads up to 25 tons. Ruggedness without excess weight.

HONING UP TO 42-IN. I.D. X 55-FT. LONG
Typical of the extensive facilities of McKiernan-Terry for unusual jobs.

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MK 323

STANDARD FORMS

COVERING IMPORTANT CONTRACTING PROCEDURE

Prepared by The Associated General Contractors of America and Cooperating Bodies

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FOR A.G.C. MEMBERS ONLY

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List of Styles and Prices on request.

SIGNS AND SEALS

39.	A.G.C. Cardboard Seal (red and black) 24" dia.	.50
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41.	A.G.C. Decalcomania Seal (red and black)	
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Metal Seals and Decals: 20% discount for orders of more than 50; 40% discount for orders of 200 or more.

43. A.G.C. SOCIAL SECURITY FORMS

Form SS1: Application for Employment; Form SS2: Employees' History Record; Form SS3: Employees' Employment and Earnings; Form SS4: Payroll. List of prices and styles will be furnished to A.G.C. members on request.

USE THE CONVENIENT COUPON TO PLACE YOUR ORDER

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43. Price List and Samples ☐

Price List and Styles of Emblem ☐

TOTAL COST .....

Make Checks payable to CONSTRUCTION FOUNDATION, A.G.C., Munsey Building, Washington 4, D. C.

Gentlemen: Enclosed find check for $..... for which please send materials as ordered by number herewith.

Name..... *Address*.....

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Jan. 1953

Seated, left to right: A. S. Horner, A.G.C. president, and Roy E. Secord, recently retired as president of the Florida West Coast Chapter. Standing, C. P. Street, 1953 A.G.C. presidential nominee, and H. E. Foreman, A.G.C. managing director.

Tampa, Fla., Tribune Photo

A.G.C. Officers Visit Southern Chapters

• Horner, Street, Foreman Discuss Future of Construction

» THE NO. 1 question about the nation's No. 1 industry—what does the future hold for construction—came in for intensive discussion during a recent tour of A.G.C. chapters in five southern states by three top officers of the association.

With government sources forecasting another peak in new construction for 1953 of $33.5 billion, the immediate outlook, of course, is good. As can be expected, however, the long range prospect is clouded with "if" factors which could knock any forecast into the proverbial cocked hat.

Threat of War

Principal among these factors are the trend of the general business level, that is whether the American economy will continue its present expansion or taper off, and the haunting spectre of an atomic war.

All three officials, A.G.C. President Arthur S. Horner, 1953 presidential nominee, C. P. Street, and H. E. Foreman, A.G.C. managing director, were agreed on one thing in their swing through Florida, Georgia, Alabama, Louisiana and Texas. If war is averted, they said, and the nation's economy remains dynamic, the construction industry will expand with it. Huge as it is, construction has the capacity and the flexibility to grow and to build the larger physical framework a greater America will need, the association officers declared.

Under these conditions they foresaw new construction totalling about $40 billion annually by 1960. A.G.C. chapters and organizations visited in the late November tour were the South Florida Chapter, West Florida Chapter, Georgia Branch, Alabama Branch, Shreveport Chapter and the Texas Executive Council.

The three men spoke briefly and then joined in general discussions of national problems and their relation to local questions. Mr. Horner dealt with the possibility of a general falling off of business activity. He said contractors should advocate the immediate planning of public works to be put into effect if the "war-generated" prosperity drops off.

"If we can spend billions for war, we can spend for the things we need and can put to use," he declared, emphasizing that the planning of public works should be advocated "not for our own benefit, but in the public interest." Mr. Horner pointed to the "terrific backlog of civilian construction which needs doing" and declared that the nation's community leaders should be "agile-minded" enough to find means of financing it.

Mr. Street urged contractors to create favorable public relations by their everyday actions. He said it was important to maintain a position of

Below, front, left to right: W. Murray Werner, national A.G.C. director; Mr. Street; Mr. Horner; Benton L. Kelly, president, A.G.C. Shreveport Chapter, and Mr. Foreman. Rear, Marshall L. Walker, president, North Louisiana Chapter, American Institute of Architects; Ed McKeever, executive director, Council of A.G.C. Chapters, Louisiana, and Mayor Clyde E. Fant of Shreveport.

Shreveport, La., Times Photo

dignity built up in the public eye over the years.

In relation to dangers facing general contractors today, Mr. Street said "legislation on national and state levels attempting to define the relationship between general and sub-contractors should be vigorously fought" by all members. He said "strong legislative committees" are a must to discover and combat damaging legislation.

Mr. Foreman said it was too early to predict what will happen after the change in the Washington administration, adding that he was hopeful of a "better business climate." He said it was hoped the new administration would review the present situation regarding building materials and "take a realistic view of what the construction industry needs."

Sees Welfare Advances Retained

The A.G.C. managing director did not look for any "sharp reversal of the trend of legislation when the new Congress convenes, but a change in tempo, a slower pace."

It was his opinion the administration would take the "long view to a restoration of freedom of action by business within the limits of law, and retain the social welfare advances regarded as essential in a nation so bountifully blessed with the riches of soil, mine and factory."

The three A.G.C. executives spoke out strongly against controls, declaring that copper, steel and aluminum are in good supply but that the indecisiveness resulting from federal controls was keeping owners from "doing what they want to do in commercial and public works." They called for the relaxation or preferably, the abolition, of controls by Jan. 1, 1953. (Easing of many curbs on civilian projects and the allotment of substantial extra amounts of materials for commercial, public and other types of projects on Jan. 1 was recently announced by the National Production Authority. See page 27.)

State-Wide Attendance

The meetings were truly regional in character, being attended by statewide audiences of contractors, architects, engineering society representatives, organizations with allied interests and public officials of the area. A.G.C. officials were gratified at the manner in which local construction problems were presented and at the interest expressed in them by state leaders.

No. California Elects Young as President

• Chapter Attributes Membership Rise to A.G.C. Principles

President Dallas Young and Vice President H. C. Maginn, left to right.

» NORTHERN California Chapter of the A.G.C. climaxed an active year in growth and service to its members with its 34th annual meeting Dec. 5-6 in San Francisco.

Installed as president for the coming year was Dallas Young, of MacDonald, Young & Nelson, Inc., San Francisco, who was chapter vice president last year. H. C. Maginn, Calaveras Cement Co., was elected vice president and Ben C. Gerwick, Jr., Ben C. Gerwick, Inc., treasurer. Mr. Maginn is an associate member of the chapter. Winfield H. Arata was re-elected manager for 1953.

Harold O. Parish, outgoing president, praised directors, committee members and the staff who he said have put in "longer hours serving to solve the many industry problems with which we have been confronted and which it seems become greater every year.

"Legislative matters, labor and welfare, civil defense, military affiliation, accident prevention, apprenticeship specifications and general public relations work are some of the most important problems which have taken a great deal of our time and attention with resulting benefit to our membership and also to the general public we serve."

Mr. Arata, reporting on membership growth, said that last year the chapter's membership reached an all-time high because of the principles for which the A.G.C. stands and because the benefits which they render have given recognized leadership to the members.

Convention Speakers

Speakers at the convention included Mayor Elmer E. Robinson of San Francisco who extended the city's welcome to the gathering; Professor Robert J. Kerner, Russian expert at the University of California, who spoke on "Soviet Russia Against the World"; State Public Works Director Frank B. Durkee who told the contractors of future construction plans; Col. Donald S. Burns, division engineer, South Pacific Division of the Corps of Engineers, who described the Corps' large construction program; and W. J. McCrystle, regional engineer for the Bureau of Reclamation, who reviewed the Bureau's construction program.

Besides the chapter's officers, other directors elected include Gordon Ball, Berkeley; Ralph W. Brown, Eureka; E. L. Clements, Hayward; John Delphia, Patterson; Gordon Pollock, Sacramento; A. E. Holt, South San Francisco; and Charles L. Harney, Jack How, Peter Jacobsen, Felix H. Siri and John F. O'Connell, all of San Francisco.

A.G.C. of Illinois Meets, Elects Shelato

• Vice President Street Stresses Need of Chapter Support

» THE Associated General Contractors of Illinois, holding its 46th annual convention Dec. 8-9 in Springfield, elected Orville Shelato, McCalman Constr. Co., president for 1953. He was formerly vice president.

Gene W. Gunther, H. H. Gunther Constr. Co., was elected vice president; T. H. Joyce, Springfield, was re-elected secretary-treasurer and Milo P. Flickinger, also of Springfield, was re-elected executive secretary.

Nearly 600 members, guests and representatives of allied groups attended the meeting held in the Leland Hotel. The convention ended with the annual banquet Dec. 9.

New members elected to the board of directors were J. E. Dippold, Edwardsville and C. W. Josephson, Chicago Heights. Retiring President J. F. Gallagher, Gallagher Asphalt Co., Inc., Thornton, was made ex-officio member of the board.

Outgoing members of the board included George Albright, Joliet; H. W. Hartmann, Peoria; Clay V. Hoskins, Mt. Vernon and E. T. Simonds, Carbondale.

A.G.C. Presidential Nominee C. P. Street, Charlotte, N. C., addressed the convention on the present state of the construction industry. He also praised the Illinois association for its work since it was founded 46 years ago. He stressed the need of support of state chapters and individuals to keep construction the nation's largest industry.

Frank N. Barker, chief engineer for the Illinois Division of Highways, praised contractors for their part in the state's highway restoration program this year which amounted to $108 million. Of this, he said, $85 million went into new construction and $23 million was additional work carried over from 1951.

Mr. Barker cited how critics doubted that the state and general contractors would be able to handle any extensive highway building program.

"But we drew the plans, added about 100 new state highway engineers, the lettings were held, the awards were made and you contractors did the work ahead of schedule with flying colors," he stated.

James D. Marshall, assistant managing director of the national A.G.C., told the banquet meeting that the construction industry could expect less "interference" from government under the coming administration.

Ellis Danner, University of Illinois professor of highway engineering, told the general contractors that highway improvement is everybody's job. He said that much original thinking is necessary to develop a highway program that is more than "just getting by."

S. T. Roebuck, Newton, Miss., president of the Highway Conservation League said, regarding highway needs, that "we must increase our road tax income so that we may build more new roads faster, and second, we must make more miles of existing roads last longer."

Officers and directors of the A.G.C. of Illinois named last month are as follows: left to right, front row, Gene W. Gunther, vice president; Orville Shelato, president and James F. Gallagher, retiring president; back row, H. W. Hartmann, George Albright and C. W. Josephson, directors.

Chapter Expands Activities

The Associated Building Contractors of Toledo, Inc., A.G.C., is currently conducting a campaign to step up chapter activities, expand membership and represent the construction industry more effectively in its area.

Chapter Secretary J. Neil Crowley, Jr., recently announced that, so far, five new members have been added giving the chapter now 11 members.

New members are as follows: J. H. Berkebile & Sons; Fred W. Entenman Co.; Ruch Constr. Co.; Ruihley & Kuerten, Inc., and Stanford E. Thal, Inc.

He also stated that the group may change its name to The Associated General Contractors of Toledo.

John L. Hill, 63, president of the Franklin Contracting Co., A.G.C. Newark, and the Great Notch Corp., died of a cerebral hemorrhage November 29. He was a member of the A.G.C. of New Jersey and the New Jersey Licensed Professional Engineers. Born in Abbeville, S. C., Mr. Hill lived in the Newark area for 40 years. He joined the Franklin firm as an engineer and became president of it and its affiliate, the Great Notch Corp., in 1934.

THINK BIG... WHEN YOU

BIG CAPACITY **BIG PROFIT**

BIG PERFORMANCE

THINK CEDARAPIDS...

for higher percentages of secondary crushing and greater screening capacity

THE COMMANDER

Here's a plant that averaged 350 tons per hour of 1" material *with 20% crush* on a job in Minnesota. In another pit, the Commander produced 445 tons of ¾" material per hour with approximately 12% to 15% crushing! That's the kind of output that lets you *think big* about aggregate production and profit.

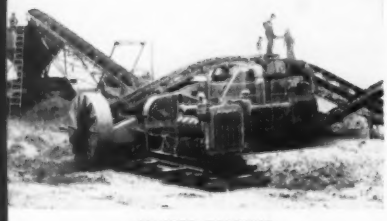
The Cedarapids Commander was designed specifically for producers who need greater output of fine-crushed products, or whose pit conditions put a bigger load on the secondary crusher. The big 30" by 22" roll crusher increases secondary crushing capacity by approximately 50% and steps up the stage of reduction.

To balance out this greater roll crusher output, the large 48" x 10' two-and-a-half deck horizontal vibrating screen provides 30% more screening capacity for the plant. The feed conveyor, delivery conveyors and under-crusher conveyor are 30" wide to handle the higher capacity of the plant. Best of all, *maintenance and operating costs are as low as on other Cedarapids plants!*

ANOTHER Cedarapids PRODUCT

The Commander is loaded with other big production features. Ask Commander owners for facts and figures or see your Cedarapids distributor for complete details.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.



MASTER TANDEM
Here's the biggest all-around gravel producer in the Iowa line. With a 10" x 36" jaw crusher, 40" x 22" roll crusher and 48" x 12' screen, the Master Tandem is really the master of low-cost, big volume production on a wide variety of crushing and screening jobs.

PITMASTER
This is the plant you'll want for smaller jobs. The Pitmaster's 10" x 16" jaw crusher, 16" x 16" roll crusher and 30" x 9'5" screen assure excellent production and extremely economical operation. For pits with a higher percent of oversize, ask about the Twin Jaw Pitmaster.

DOUBLE IMPELLER IMPACT BREAKER
When you need cubical shaped aggregate in tremendous volume, check the performance records of this impact breaker. On one job, the big Model 5050 established a peak production record of 724 tons per hour. Exceptionally low-cost operation assures a high return on your investment.

THINK OF AGGREGATE PRODUCTION

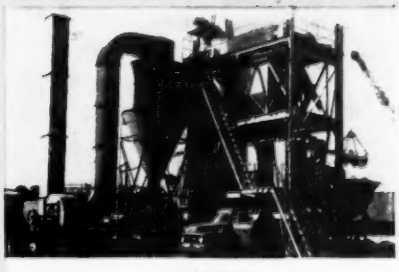
Solving the "growing-pain" problems of our highway system is a real job. It *can* be done, but it will take big thinking. Billions of tons of aggregate are needed to keep America on wheels. *Think big* about equipment to produce it!

Think of equipment that produces greater hourly tonnages than ever before . . . equipment that's quality-built to take a daily beating in the world's toughest industry, and still keep slugging away, month after month. Think about the bidding advantages of equipment that combines big capacities with low operating and maintenance expense to hold per ton costs to levels comparable with those of twenty years ago!

You American contractors have the know-how to solve the critical highway problem . . . Cedarapids provides the equipment to help you *think big* about profitable production of big volumes of aggregate.

FOR EVERY CRUSHING AND SCREENING JOB

THINK CEDARAPIDS . . . WHEN YOU THINK BLACK TOP

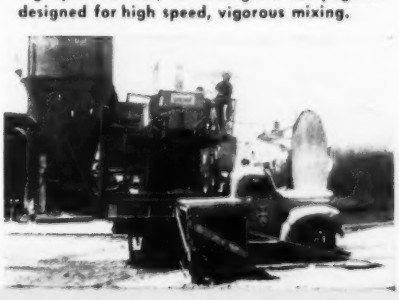


MODEL E

Two tons at a batch is average production for this Cedarapids Bituminous Mixing Plant. All-electric operation plus automatic time controls, signal lights and air controls insure absolute accuracy of mix and profitable production for low-bidding contractors.

MASTER PLANT

This two unit continuous-mix plant combines the Cedarapids Master Mixer and Gradation Control to supply specification mix in big volume. The mixing unit is offered with either a twin shaft pugmill which conforms to all existing specifications, or a single shaft pugmill designed for high speed, vigorous mixing.



MODEL FA

The most portable batch type bituminous mixer in the Cedarapids line. The FA can be set up for operation in a matter of hours. Centralized controls insure fast, easy, one-man operation. Balanced coordination of every part produces up to 350 tons per day of accurately weighed and uniformly mixed aggregates and bitumen. Quality-built for long-term service at lowest cost.

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QUANTITY
SURVEYS

FOR ALL
CLASSES OF CONSTRUCTION

- Large staff of engineers
- Speed, accuracy, full detail assured
- Reasonable fees, pre-fixed

Approved by A.G.C. and Federal, State and Municipal Authorities

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CONCRETE SURFACERS

"Berg" Concrete Surfacers are extensively used for surfacing and finishing applications on all types of concrete construction.

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THE CONCRETE
SURFACING MACHINERY CO.
CINCINNATI 32, OHIO

Texas Council Elects Heldenfels President

• Hears National Officers, Plans State Convention Next Year

Officers of the Texas A.G.C. Council from left to right: R. M. Dixon, retiring secretary; F. S. Oldt, retiring chairman; F. W. Heldenfels, Jr., new chairman; J. R. Murphy, vice chairman, and Vance Newell, secretary.

The Texas A.G.C. Chapter Executive Council, meeting Nov. 23-24 in Dallas, elected Fred Heldenfels, Jr., Corpus Christi, currently a member of the National A.G.C. Executive Committee, as chairman for the new year.

Mr. Heldenfels is a partner of Heldenfels Bros., Corpus Christi highway contractors, and past president of the Texas Highway Branch.

The meeting, termed by many as "one of the most successful and best attended," also elected as officers J. R. Murphy, of the Fort Worth Chapter, vice chairman, and Vance Newell, managing director of the Texas Highway Branch, secretary. Outgoing officers include F. S. Oldt, Dallas, former chairman, Mr. Heldenfels, former vice chairman and R. B. Dixon, Dallas, former secretary.

State Conference Planned

During the main business meeting a recommendation by the West Texas Chapter and the Panhandle Chapter for converting one of the quarterly executive council meetings into a general state conference or convention received approval by the group. The first such state-wide convention is expected to be held February 1954.

Special guests at the November meeting were national A.G.C. President Arthur S. Horner, Vice President C. P. Street and Managing Director H. E. Foreman.

Next executive council meeting will be held at College Station, Feb. 22-23, where one of the two student chapters in the nation is located. The other student chapter is at Massachusetts Institute of Technology.

Brown Heads Seattle A. G. C.

W. D. Brown, general manager of Howard S. Wright Co., A.G.C., was elected president of the Seattle Chapter of the A.G.C. of America, Inc., for 1953 at the chapter's annual meeting Dec. 9.

Mr. Brown

Mr. Brown, active in chapter work for years, has previously been vice president, treasurer and on the executive board.

Others elected were: Olav Boen, first vice president; Paul Odegard, second vice president; Ray Strand, secretary, and Don Clark, treasurer.

Besides the officers on the executive committee, the following members were named: O. B. Daniels, immediate past president; George Teufel, chairman of the labor committee; Fred Ness and Gordon Mowat.

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You will find here a wealth of experience and ingenuity that has solved some mighty puzzling problems . . . within budgets . . . and on time.

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INDUSTRIAL DOORS
REVOLVING DOORS
STEEL BUILDINGS

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Widest Range

LE ROI

New Le Roi 125 cfm Airmaster at work cutting costs. The two model 52 Le Roi-CLEVELAND breakers get plenty of air, break concrete faster, and reduce the time spent on the job. You save.

THE INDUSTRY'S WIDEST RANGE OF CAPACITIES LETS

New 85 cfm— Perfect as a "one-gun" compressor. Operates heavy breaker and other tools that are too much for 60 cfm units. Here we see one operating the handy 17½-lb. Le Roi-CLEVELAND H-22 sinker.

New 125 cfm — Both gas and diesel models. Ideal for running two heavy breakers, such as these Le Roi-CLEVELAND Model 52's, from one machine. Priced the same as the old 105-cfm gas and diesel units. A low-priced liquid-cooled 105 is still available to meet your needs.

New 185 cfm — Both gas and diesel models. Offers more capacity than a 160-cfm unit, but priced the same as the old 160. Just another example that proves Le Roi gives you more for your money.

# of portable compressors ever offered gives you more for your air-equipment dollars

More sizes to choose from — in the bigger-than-ever LeRoi Line

9 SIZES — 14 MODELS

60 cfm gas	210 cfm gas
New! 85 cfm gas	New! 250 cfm diesel
105 cfm gas	New! 365 cfm gas
105 cfm Tractair	New! 365 cfm diesel
New! 125 cfm gas	600 cfm diesel (IHC)
New! 125 cfm diesel	600 cfm diesel (Murphy)
New! 185 cfm gas	
New! 185 cfm diesel	

NOW you can get more air capacity for less money! Now you can match your job requirements *exactly* with the portable compressor that lets you do the most work at the least cost! For now, thanks to Le Roi's expanded Airmaster compressor line, you have the industry's widest range of sizes to choose from!

The new Airmasters in this famous line fill present-day gaps in your air-power needs. As you know, some of the standards established years ago for air-compressor sizes are inadequate today. Bigger breakers, faster rock drills, air-motor controls, etc., eat up the reserve formerly provided by these ratings.

But you don't have to penalize yourself by working with pressures that are too low — or by operating a machine that's too big and too expensive for the job to be done. You can get a Le Roi that's exactly right for size.

Have your Le Roi distributor show you why you're ahead with an Airmaster *any way you look at it* — for adequate capacity, for minimum investment, for economy, for trouble-free operation, for long operating life. *Write for bulletins.*

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Rock Drills
Tractair
Engines . . .

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YOU AIR-EQUIP YOUR JOBS FOR GREATEST PROFIT!

New 250 cfm — Diesel-powered. Operates two lightweight wagon drills, like the Le Roi-CLEVELAND DR-34, or one heavy wagon drill, like the Le Roi-CLEVELAND DR-30. Price is same as former 210 diesel.

New 365 cfm — Gas and diesel units replace 315-cfm models. Extra capacity handles many applications that formerly required a 500. Here it runs a Le Roi-CLEVELAND DR-30 wagon drill for deep holes.

600 cfm — These heavy-duty diesel units have plenty of capacity to help you get extra footage from your wagon drills and hand-held tools. The 600 shown here operates two Le Roi-CLEVELAND DR-30 deep-hole wagon drills with plenty of air to spare for other tools.

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Famous Carpenters' Hall in Philadelphia, built in 1770. Insured by Fire Association of Philadelphia for nearly 100 years.

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In meeting your bond requirements, get the advantages that come from dealing with companies as long-established and reliable as Fire Association-Reliance.

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2 Our service facilities guarantee greatest speed in delivery of bid and performance bonds.

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Before submitting your next bid, contact your Fire Association-Reliance agent. If you don't know who he is, write us direct and we'll be glad to give you his name.

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CHAPTERS • BRANCHES

Vilbig Heads Dallas Group

The Dallas Chapter of The Associated General Contractors of America, in annual meeting Dec. 2, elected Charles A. Vilbig, Vilbig Bros., Inc., Dallas, president for the coming year.

Other new officers named include J. Leo Norton, Miller & Norton, vice-president and W. N. Vivrett, Jr., Vivrett & Vivrett, secretary-treasurer. Julian Capers, Jr., is managing director of the chapter.

Mr. Vilbig

Mr. Norton

Retiring President Leo P. Morgan, J. E. Morgan & Sons, told members in his annual report that the chapter is in excellent financial condition, has the largest membership in its recent history and that prospects are good for a continued high level of building construction work in the Dallas area.

In the report he stated that a $24 million school bond program, recently authorized by the voters, was pending, in addition to $20 million worth of

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MAKE THEM **good**
WITH THE NEW

...THE SMALL BITUMINOUS MIXER THAT MEETS THE NEED FOR ALL MAINTENANCE AND SMALL PAVING JOBS

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AURORA, ILLINOIS, U. S. A.

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Cost records from job after job prove that Economy's system of Form Engineering and Rental Service means substantial savings in TIME—MATERIAL—MONEY for GREATER PROFITS.

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Take Your Choice!

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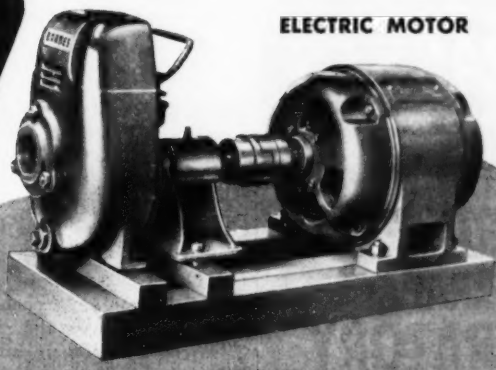

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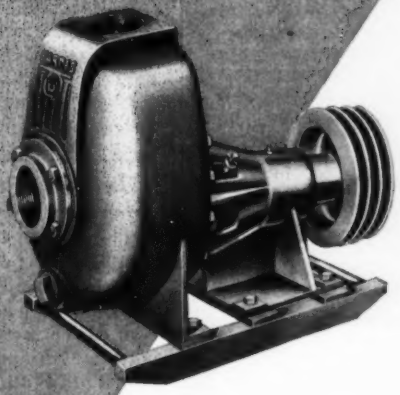
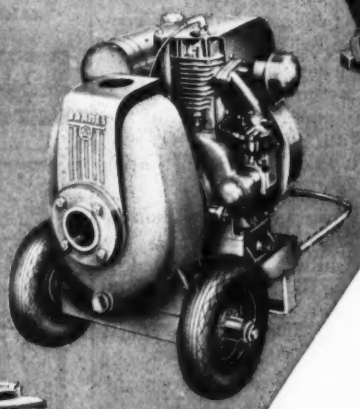
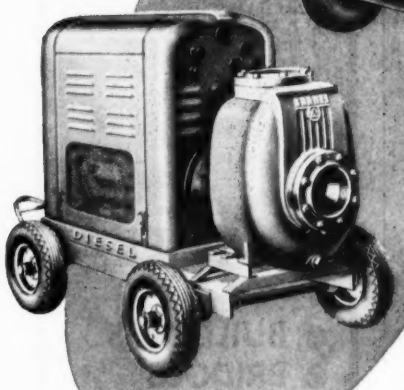
PULLEY DRIVE for use with existing power sources



GASOLINE ENGINE





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And whichever type of drive you choose, your choice will result in more of everything for your pumping dollar!

Barnes gives unmatched economy — 33,000 gallons of water pumped for each gallon of gas burned! Barnes gives unmatched lows in maintenance costs! Barnes gives unmatched, trouble-free service life! And Barnes Self-Priming Centrifugal Pumps give unmatched highs in overall performance. These are the reasons why Barnes Pumps are the choice of men who know pumps and pumping!

The Complete Line of Barnes 33,000 for 1 Pumps, Ranges from 3,000 to 90,000 G.P.H. AGC Rating.

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denser soil compaction
in "2 PASSES"
than heavy equipment
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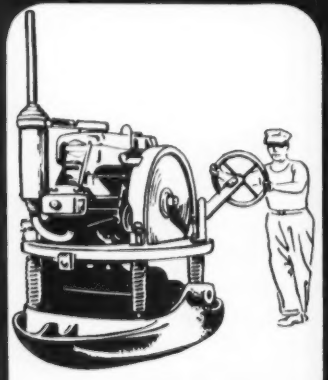
TERRAPAC
VIBRATORY
soil compactor

It weighs only 1.6 tons—yet outperforms 12-ton rollers, 7-ton vibratory rollers, 25-ton rubber-tired rollers on any type of granular soil. "Walked" by one man, it compacts 2000 sq. ft. per hour—8000 sq. ft. when towed by tractor—penetrating up to 40 inches—and getting in almost anywhere. On roads, railway embankments, back fills, dams, airfields, heavy duty floors and foundations—it helps you show a profit when other equipment can't. Write for bulletins, names of users, and nearest distributor.



TYPE MRJ-6 Terrapac is powered by a 10 HP Diesel engine. One-man operation. 65" x 45-5/16" base steers easily for maximum maneuverability, forward or backward. Rubber-tired wheels attach for transportation.

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hospital construction under contract and a $10 million hotel project expected to be let early next year. Also, prospects are bright for accelerated commercial and industrial construction by private owners if controls continue to be relaxed.

The Construction Industry Accident Prevention School held during September was the largest single project undertaken by the chapter. The weekly classes averaged 219 persons actively engaged in construction, with 135 "graduates" being awarded certificates for attending all sessions.

New directors elected at the meeting included Mr. Morgan, F. K. Buckner, Buckner & Pittman; Paul Woods, Busboom & Rauh; and E. G. Peterson, Peterson Constr. Co.

Thruway Problems Studied

The problems of completing on time in the next two years all the construction required by the Thruway and other highway work were the concern of contractors and others attending the 27th annual convention of the New York State Chapter, A.G.C., held December 10-11 at the Hotel Statler in Buffalo.

For the Thruway $145 million is under contract now and awards for another $200 million were expected to be made during the next four months, Holden A. Evans, of the Thruway Authority, reported. The Thruway alone, which is scheduled for completion in 1954, will require most of the cement production in the state, probably will require overtime work by workmen, and will be threatened by shortages of steel.

Harry J. Hush, president, Associated Equipment Distributors, Donald M. Slingerland, State Bank of Albany, L. Judson Morhouse, New York State Good Roads Federation, Senator Walter J. Mahoney, E. B. Hughes, State Department of Public Works, talked on subjects of interest to the contractors. Justice Raymond A. Knowles presided at the banquet which was a sellout.

B. R. DeWitt, Potter-DeWitt Corp., Pavilion, was reelected president when vice president Arthur J. Hendrickson, Hendrickson Bros., Valley Stream, was unable to continue active in association affairs. A. S. Wikstrom, Skaneateles, was elected vice president. William M. Lees, Albany, is managing director.

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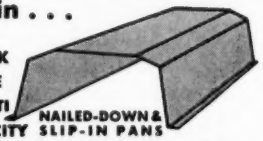

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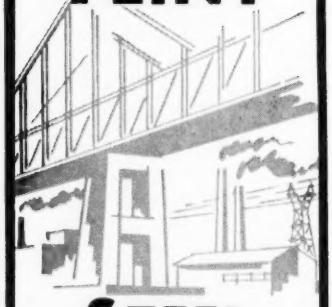

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Wyoming Builders Vote to Join the A. G. C.

• Group Would Give Association 122 Chapters over Nation

» WYOMING Contractors' Association, Inc., an independent building contractors' group with offices in Laramie, voted unanimously to affiliate with The Associated General Contractors of America at a meeting Nov. 22.

The group is expected to retain its present name if it becomes a chapter of the A.G.C. Before the formal presentation of the charter can take place a suitable set of bylaws will have to be approved by the national office. In the meantime, all services normally rendered chapters and members will be made available to the new group.

Alfred M. Pence, Laramie, secretary of the Wyoming contractors, said in a letter announcing the action that "it was definitely felt . . . that affiliation with The Associated General Contractors constituted a stimulus to interest in the organization and we are looking forward to a pleasant relationship."

A.G.C. President Arthur S. Horner, of Denver, sent a letter Nov. 12 to J. P. Steele, president of the group, stating, "I am exceedingly happy at the prospect of having a new chapter of building contractors established in Wyoming. I feel certain that the building contractors of Wyoming will have the same experience that is common to the more progressive contractors all over the United States and that the benefits of the A.G.C. will be very apparent to them."

Mr. Horner hopes to present the charter to the new chapter at a later date.

The Board of Directors of the building group directed Mr. Pence to visit the national A.G.C. office sometime before May 1. He stated that he hopes to make the trip in March.

Burt L. Knowles, engineer adviser of the A.G.C., attended the Nov. 22 meeting in Casper to explain in detail the nature of the national association's services to the industry as a whole, to the chapters and to the individual members.

Charter of the chapter would give the A.G.C. 122 chapters and branches throughout the nation. The A.G.C. of Wyoming, the state's other chapter, made up of highway and heavy contractors, was chartered in 1934.

Fla. W. Coast Chapter Meets

The Florida West Coast Chapter of the A.G.C. in annual meeting Dec. 2 elected Albert H. Jones, Mills & Jones, Inc., St. Petersburg, president for the new year.

Mr. Jones, in his acceptance speech, asked for cooperation of each member and vowed to do his best to make the coming year one of continued success.

Mr. Jones

He spoke of the "special purposes" of the chapter and said the work program strives for objectives that are "common denominators of the general good," which can only be obtained by the collective effort of the group.

Retiring President Roy E. Secord in his annual report to the meeting praised the work of the board of directors and the chapter's various committees.

Other new officers include: J. L. Ewell, Ewell Engineering & Contracting Co., Lakeland; and Norbert Fuller, C. A. Fielland, Inc., Tampa. Judson Edwards will continue as executive secretary.

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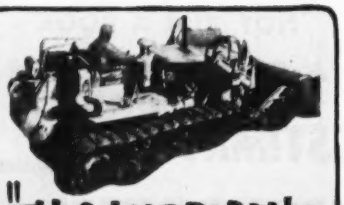

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—says J. O. ARCHIBALD
of Redwood City, California

The job was clearing 500 acres of salt marsh for crystallizing ponds. To quote, "We selected LUBRIPLATE No. 107 for track and general lubrication and LUBRIPLATE APG-140 for transmissions and final drives. During the entire job there was no replacements of track rollers nor any tie-ups of equipment due to parts replacement or breakage!"

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Wisc. Chapter Hears Horner

The annual meeting of the Wisconsin Chapter of the A.G.C., Dec. 4-5, elected Orvall J. Nelson, of Peter Nelson & Son, Inc., La Crosse, as president for 1953.

Leslie G. Miller, Immel Construction Co., Fond du Lac, was elected vice president and J. Harry Green remains as secretary-treasurer and manager of the chapter.

National A.G.C. President Arthur S. Horner, Denver, and Assistant Managing Director James D. Marshall told the convention that the construction industry could help the economy if a recession occurred.

The pressing need for public works such as sewers, waterworks, highways, airports, schools, hospitals and utilities should be made known to the public, they told the contractors attending the meeting.

"We don't advocate the federal government's doing the work if it can be financed on the local level," Mr. Horner said. "If the federal government cut spending, it would leave more money for taxation on the local level for this type of project."

New directors elected for the coming year were Milton B. Findorff, J. H. Findorff & Son, Inc., Madison; Alfred Fleck, Jr., Selmer Co., Green Bay; and J. D. Moore, L. G. Arnold, Inc., Eau Claire.

A.G.C. Branch and Chapter Meetings

Jan. 12. PORTLAND CHAPTER. Portland. Multnomah Hotel.

Jan. 13. MASTER BUILDERS ASSN., INC. District of Columbia. Mayflower Hotel.

Jan. 14. PHILADELPHIA CHAPTER. Philadelphia. The Barclay.

Jan. 15-16. KANSAS CONTRACTORS ASSN. Kansas City. President Hotel.

Jan. 15-16. VIRGINIA BRANCH. Roanoke. Hotel Roanoke.

Jan. 16. ALABAMA BRANCH. Birmingham. Tutwiler Hotel.

Jan. 16. MOUNTAIN PACIFIC CHAPTER. Seattle. Benjamin Franklin Hotel.

Jan. 17. MISSISSIPPI VALLEY FLOOD CONTROL BRANCH. New Orleans. Hotel Roosevelt.

Jan. 19. MILWAUKEE CHAPTER. Milwaukee. Schroeder Hotel.

Jan. 19. NEBRASKA BUILDING CHAPTER. Omaha. Hotel Fontenelle.

Jan. 19. NEBRASKA CHAPTER. Omaha. Hotel Fontenelle.

Jan. 19-20-21. PIPE LINE CONTRACTORS ASSN. Houston. The Shamrock.

Jan. 21. LOUISVILLE CHAPTER. Louisville. Chapter Building.

Jan. 23. INDIANA GENERAL CONTRACTORS ASSN. Indianapolis. Construction League Dining Room.

Jan. 29-30-31. A.G.C. OF MINNESOTA. Minneapolis. Radisson Hotel.

Jan. 30. CENTRAL CALIFORNIA CHAPTER. San Francisco. St. Francis Hotel.

Jan. 30. IDAHO BRANCH. Boise. Hotel Boise.

Jan. 30-31. COLORADO CONTRACTORS ASSN., INC. Denver. Shirley-Savoy Hotel.

Feb. 10. TACOMA CHAPTER. Tacoma. (Not Selected)

Feb. 12. CONSTRUCTORS ASSN. OF WESTERN PENNSYLVANIA. Pittsburgh. Hotel William Penn.

Feb. 13. KANSAS CHAPTER, BUILDERS DIVISION. Wichita. Hotel Lassen.

Feb. 21. KENTUCKY HIGHWAY DIVISION. Louisville. Kentucky Hotel.

Mar. 3. A.G.C. OF ST. LOUIS. St. Louis. Missouri Athletic Club.

Mar. 11. HOUSTON CHAPTER. Houston. Ben Milam Hotel.

Apr. 7-8. MICHIGAN ROAD BUILDERS ASSN. Grand Rapids. Pantlind Hotel.

April. BUFFALO CHAPTER. Buffalo. (Not Selected)

Tentative Dates

Jan. 14. SOUTHERN CALIFORNIA CHAPTER. Los Angeles. Statler Hotel.

Jan. 16 or 23. A.G.C. OF WEST VIRGINIA. Charleston. Daniel Boone Hotel.

Jan. 21. DETROIT CHAPTER. Detroit. Detroit Athletic Club.

Jan. 27. SOUTH FLORIDA CHAPTER. Coral Gables. Coral Gables Country Club.

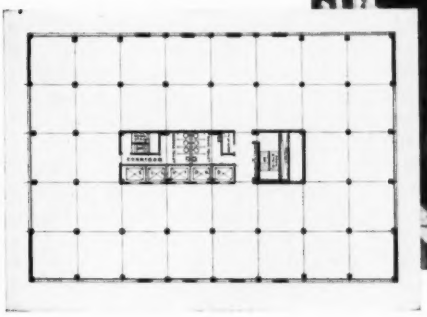
Feb. MICHIGAN CHAPTER. (Not Selected)

Feb. or Mar. METROPOLITAN BUILDERS ASSN. OF NEW YORK CITY. New York. (Not Selected)

Mar. CINCINNATI CHAPTER. Cincinnati Club.

June. TEXAS HIGHWAY BRANCH. Austin. Austin Hotel.

Below: Typical floor layout, showing reinforced concrete central core and exterior panels which effectively resist the horizontal loads developed by earthquake forces.



Architect: Claude Beelman; *Associate Architect:* Herman Spackler; *General Contractor:* C. L. Peck; *Structural Engineers:* Brandow and Johnston.

LOS ANGELES OFFICE BUILDING

Has Simple, Light Steel Frame

This 12-story, 3-unit office building in Los Angeles, built recently for the Tishman Realty and Construction Co., Inc., of New York, is a limit-height structure with a structural frame, including intermediate beams, weighing only 11 lb psf of floor area.

The light-weight construction of this building was made possible by changes in the Los Angeles Building Code, permitting the use of prefabricated light-gage steel floor panels, acting as transverse diaphragms to transmit lateral or earthquake forces. The structural frame is designed to resist vertical loading only.

Another weight-saving factor of this new building is the use of a false ceiling of vermiculite plaster, suspended 14 in. below the bottom of the floor beams. This fireproof envelope replaces the heavy encasement of each beam, which was required under earlier Codes. It reduces the dead load, cuts material costs, and saves erection time.

Each of the three 100 ft x 150 ft units has a 20 ft x 75 ft central core, providing elevator and air-conditioning services. The cores and some exterior panels have reinforced concrete walls 12 in. thick. Resistance to shear, designed into these walls, combats earthquake forces. The structural design gives complete freedom in placement of partitions. Under-floor ducts facilitate the installation of utilities.

Both the fabrication and erection of the 3500-ton steel framework for this unusual, glass-fronted structure were handled by Bethlehem Pacific Coast Steel Corporation, Bethlehem's subsidiary on the Pacific Coast.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation
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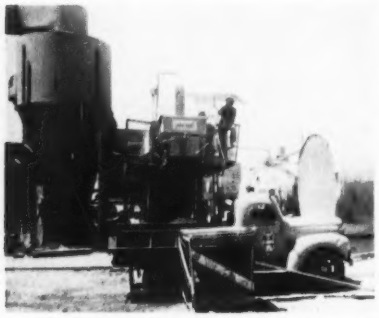
BETHLEHEM STEEL

FABRICATED STEEL CONSTRUCTION

Bituminous Mixing Plant—*Iowa Manufacturing Co., Cedar Rapids, Iowa.* Volumetric-type bituminous mixing plant is designed to supply specification mix in large volume. Known as "Cedarapids Master Plant," continuous-mix plant consists of 2 units—improved Model MM master mixing unit and newly engineered Model MGC master gradation control unit. It is offered with choice of single-shaft or twin-shaft pugmill. Plant features accurate controls, adjustable displacement positive type pump, covered 48″ calibrated apron feeder on gradation control unit synchronized with bitumen pump. Electric interlocked "flow feelers" over feeder automatically stop feeder, elevator and pump if any size aggregate or mineral filler is exhausted. Bin level indication lights show if any bin compartment is nearly empty. Selector switch provides for automatic or manual control. Plant is portable.



Iowa Manufacturing Co.'s "Cedarapids Master Plant"

Batteries—*The Electric Storage Battery Co., Automotive Replacement Sales Division, Box 8109, Philadelphia 1.* XF line of batteries for gasoline- and diesel-powered trucks and off-highway equipment are offered in 6- and 12-volt units. Six-volt batteries are made with 21, 25 and 41 plates per cell and respective capacity ratings of 168, 200 and 336 ampere hours at 20-hour rate. Twelve-volt units are made with 13, 21 and 25 plates per cell and capacities of 100, 168 and 200 ampere hours, respectively, at 20-hour rate. Features of XF line include new grid alloy; new active material; new combination separators and retainers; containers and covers designed for ruggedness and safety; vibration-proof, heat-resistant sealing compound; vent plugs of functional design; electrolyte of lower specific gravity.

Scaffolding—*Automatic Devices, Inc., 6107 Bartmer Ave., St. Louis 14.* "Adjustomatic Special" tubular scaffolding features tapered aluminum coupler which reduces vertical erection time; tapered studs which guide braces onto panels; instant locks which secure braces on studs; 3-point braces. It is used either for construction scaffolding or rolling towers and is interchangeable with standard types. It is described in 8-page catalog available from manufacturer.

Dozer-Rooter—*Electric Steel Foundry Co., 2141 N.W. 25th Ave., Portland 10, Oreg.* Device is heavy-duty tooth shank housing which is mounted on moldboard of bulldozer by means of clamp used with adapters and saddles which enable it to fit most dozers. Rooter shank has 4 adjustments of ripping depths below dozer's cutting edge and is equipped with "Esco" box-type replaceable points. Rooters can be attached in pairs or used singly. Folder, No. 194, describing machine is available from manufacturer.

Pumps—*The Galigher Co., 545 W. 8th S. St., Salt Lake City 4.* "Vacseal" solids- and acid-handling pumps are made in rubber-lined and all-metal types in 2″, 3″, 4″, 6″ and 8″ sizes with capacity ranges up to 3,000 g.p.m. They operated on "vacuum-seal" principle which prevents fluids or entrained solids from being forced into gland. They are recommended for handling sand and gravel and cement. Pumps are described in Bulletin PB-52, available from manufacturer.

Roofing, Siding—*Toledo Porcelain Enamel Products Co., Renkert Bldg., Canton, Ohio.* Enameled steel roofing and siding material called "Vitri-Cor" is development of "Vitric-Steel" first produced in 1939 by Republic Stamping and Enameling Co. It can be applied to wood or steel frames. All holes for nuts or bolts are drilled on job. Variety of fasteners made of corrosion-resistant materials is available for applying material to steel frames.

MC Self-Raising Tower-Hoist

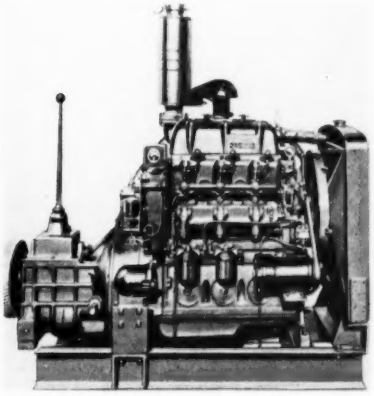
THE INDUSTRY'S MOST VERSATILE

- Picks itself up
- Easily extends
- Lifting heights up to 94 feet
- Single or Double Drum Hoists
- Platform speed—100 ft. per min.
- Lifting capacity—2,500 lbs.

Optional Equipment: Gin Pole Assembly, "Chicago" Boom, Tip-Over Bucket, Truck Mounting, Interchangeable 10′ Extensions.

CONSTRUCTION MACHINERY COMPANIES
WATERLOO, IOWA

Power Unit—*Harnischfeger Corp., Diesel Engine Division, Crystal Lake, Ill.* "Diesel power-package" for small shovels is built around P&H Model 387-C 2-cycle, 3-cylinder diesel engine of 60 h.p. Included is all equipment required for shovel installation: mounting brackets to fit original engine bed, necessary controls and power connections and reduction gear if needed.



"P&H Diesel Power Package"

Truck—*Cook Bros. Equipment Co., 1815 N. Broadway, Los Angeles.* M-310 dump truck has heavy-duty front axle to permit carrying more of load toward front. Powered by Ford 317 V-8 overhead-valve, 155 h.p. engine, truck is available with dual gear drive, dual center chain drive or double reduction axle with third axle attachment. Single-passenger cab has unobstructed view. Wheelbase length is 174" but may be varied to meet state requirements. Capacity is 15 tons. Truck is equipped with hydraulically powered telescopic hoist.

Optical Level—*Kern Surveying Instrument Division, Paul Reinhart Co., 66 Beaver St., New York 4.* GK-1 optical level has no foot screws but ball-and-socket joint instead. When instrument is placed on tripod and twisted into place, ball-and-socket joint and bulls-eye level become firm, rigid whole. After it has been leveled with bulls-eye device, fine tilt screw is adjusted to bring telescope into perfect level. Telescope glass has stadia lines for distance readings. Another level, GK-1C, is provided with horizontal circle divided into 360 degrees. It can be set to zero reading at any point and magnifying glass permits direct readings to $\frac{1}{10}$ of degree and estimated readings to $\frac{1}{20}$. All air-to-glass surfaces have been treated with hard coating which prevents scratches and provides more brilliance to telescope. Instruments are made in Switzerland and are sold and serviced by several representatives in United States.

Paver—*Pioneer Engineering Works, 1515 Central Ave., Minneapolis 13.* Model BP-6 bituminous paver features fast width adjustability from 9′ to 12½′; oscillating compaction and finishing controlled with tiltable screens; automatic, positive matching to level of adjacent course, curb, gutter or other structure. It is designed for laying all types of bituminous material. Bulletin describing machine is available from manufacturer.

Rivets—*Southco Division, South Chester Corp., Lester, Pa.* Hammer-driven blind rivets for fastening to cinder block, brick and concrete, wood, metal laminated over insulation and most masonry materials are inserted in ¼" diameter hole and expanded from one side with hammer. Bulletin on rivets available from manufacturer.

Earth Drill—*The Buda Co., Harvey, Ill.* Model Y-1 drills holes from 6" to 36" in diameter and up to 12′ in depth. It drills vertical or angle holes. All adjustments are hydraulically controlled. It is powered by Buda 6-B-230 industrial gasoline engine. Transmission is heavy-duty industrial type with 4 speeds forward and one reverse. Unit, built on steel skid-type frame, can be mounted on 1½- to 2½-ton truck, half truck or other conveyance.

Buda Model Y-1 earth drill

HOW TO HANDLE
WET JOBS

#13 of a Series

RELOCATION OF
HOGAN'S CREEK

Jacksonville, Florida

Contr: Duval Eng'g & Cont'g Co.

LARGE VOLUME DRAINED AT
VERY LOW FUEL COST

EXCAVATION ON this job was 15 ft deep (see photo) and ground water had to be lowered 10 ft in difficult soil (very fine sand with clay lenses.) How would you have estimated fuel requirements, figuring approximately 400 ft of header-line perimeter?

• Actually, one diesel-powered Griffin pump, working continuously 'round-the-clock, consumed only 35 gal of fuel each 24 hrs, even though on jobs of comparable scope, the average diesel pump will usually eat up anywhere from 40% to 80% more than this quantity. Thus the every-day savings to the contractor were appreciable.

• Another interesting feature was the use by Griffin engineers of a new type slip-on swing joint (see photo) to speed installation of the wellpoints. Any wonder contractor termed the job "100% success!"

GRIFFIN
WELLPOINT CORP.
881 East 141st Street, New York 54, N. Y.
Hammond, Ind. Houston, Tex. Jacksonville, Fla.
In Canada: Construction Equipment Co., Ltd.
Toronto Montreal Halifax

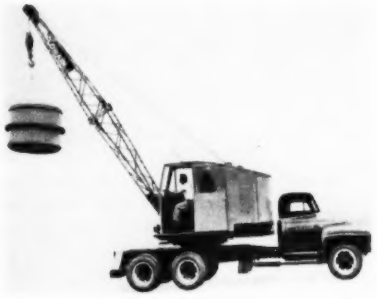
Concrete Form Panel—*Anacortes Veneer, Inc., Anacortes, Wash.* "Armorbord" hardboard panel features strength and flexibility. It is made in 3 thicknesses. It is highly flexible in $\frac{1}{8}$" and $\frac{3}{16}$" panels which are recommended for forming for sharply curved concrete surfaces. Third size, $\frac{1}{4}$", is strong and rigid and is highly stable under changing moisture conditions, manufacturer states.

Electric Plant—*D. W. Onan & Sons, Inc., Minneapolis 14.* New 180-cycle gasoline engine-driven electric plant for operating high-frequency electrical work tools provides 5,000 watts of A.C., 230-volt, 180-cycle, 3-phase power or 3,000 watts, 230-volt, 180-cycle A.C. plus 2,000 watts, 115 volt D.C. Known as Model 5CK-185M, it is powered by Onan "CK" 2-cylinder, 4-cycle, air-cooled gasoline engine. Over-all dimensions are: Length 35", width 23½", height 23½", weight 270 lbs. Standard equipment includes mounted 4½-gal. fuel tank and carrying frame. Unit is manually started.

Abrasive Blades—*Porter-Cable Machine Co., Syracuse 8, N. Y.* High-speed kick-proof electric saw and 3 types of abrasive blades are designed to cut tough materials. "Red label" blade cuts compositions such as Transite, Mycoloy, asbestos siding, Masonite, fiber board and non-ferrous metals. "Green label" blade cuts stone substances, including concrete or cinder block, brick, tile, terrazzo, marble, slate, granite, porcelain and plastic materials. "Blue label" blade cuts iron and steel in their various forms. Blades are reinforced and semi-flexible. Side of blade can be used as grinding wheel to de-burr, bevel or polish. Blades are available in 6", 7" and 8" diameters.

Grader Blade Shift—*American-Coleman Co., Omaha, Nebr.* "Side Shift" attachment allows blade to be shifted to right or left. Designed for use with all American graders, it gives blade extreme reach of 56" outside rear tires. Moldboard is 12' x 22' x $\frac{5}{8}$" and moves on 2 chrome-plated slide rails. Special rollers prevent slide rails from binding and provide blade support when shifting. Blade can be shifted while working and machine moving and when in any position. Ratchet and tooth assembly locks blade securely.

Truck Crane—*The Thew Shovel Co., Lorain, Ohio.* Lorain Model TL-10 6-ton crane is designed for field mounting on truck furnished by customer. Crane consists of complete superstructure equipped as lifting crane which can also be used as ⅜-yd. dragline or clamshell. It is 2-drum, gasoline-powered machine equipped with 25' 2-piece butt-flange connected boom. Center sections are available to extend boom to 45'. Tagline for clamshell service, fairlead for dragline service, precision power boom lowering device are offered as extras.



Thew Lorain Model TL-10 truck crane

Trailers—*Trotwood Trailers, Inc., Trotwood, Ohio.* Trailer coach designed to provide mobile home for construction workers is 31' long and is offered in 2 styles—one sleeping 4 persons and other 6. Living room is 12' long, kitchen is "U" shaped and furnished with gas range, sink, work surfaces and overhead cupboards, refrigerator and electric water heater. In 4-sleeper, bathroom has bathtub. In 6-sleeper, shower replaces bathtub. Trailers have complete sanitary facilities.

Grinding, Drilling Power Tool—*Mall Tool Co., 7703 S. Chicago Ave., Chicago 19.* "MallDrill" Model 127 is housed in light-weight aluminum alloy. It has universal AC-DC motor, hardened heavy pitched gears, self-lubricating bearings, geared chuck, built-in trigger-type switch, contoured bar handles and spindle speed of 500 r.p.m. It is equipped with 10' 3-conductor rubber-covered cord and plug.

Truck Mixers—*Worthington Corp., Harrison, N. J.* Line of inclined axis "Hi-Up" truck mixers feature light weight. They are built in 3 sizes—3, 4½ and 5½ yd.—rated according to Truck Mixer Manufacturers' Bureau specifications. Each is available in 2 model arrangements. Model L C is equipped with Worthington's full-floating charging hopper with built-in seal. Model L O is equipped with Worthington fast-charging open-end type stationary hopper. Machines can be rated and used as agitators. Drum is of unusually large diameter so that center of gravity of machine is kept well forward. Drums are fabricated of abrasive-resistant steel with heavier gage at mixing end. Bulletin R-1700-B13 describing machines is available from manufacturer.

Worthington "Hi-Up" truck mixer

Masonry Water Repellent—*A. C. Horn Co., Long Island City 1, N. Y.* "Dehydratine No. 22" contains silicones which operate on principle of negative capillarity—a condition whereby capillary tube, lined with nonwettable material, offers strong resistance to passage of water. When applied to clean, dry continuous masonry surface above grade it penetrates deeply. It repels water and minimizes efflorescence while allowing masonry to "breathe." It is colorless. It is applied by brush or spray.

Heater—*Arthur C. Baumann, 7029 Grays Ave., Philadelphia 42.* "Eco-Temp" air heater delivers 375,000 BTU's at 2.75 gal. per hour. There is no smoke or soot. Unit blows heat out in straight line. It weighs 325 lbs., is 35" high, 64" long and 24" wide. It is mounted on semi-pneumatic, roller-bearing rubber-tired wheels. It has hook on top for lifting. It is equipped with thermostat for automatic operation. It burns No. 2 fuel oil and uses 110 volts, 60 cycles, single phase.

New BUDA MODEL Y-1 EARTH DRILL

Fast...Flexible...Low Cost Handles a Wide Range of Jobs

Drill Holes 6" to 36" dia. up to 12' in depth

Model Y-1 is built on a sturdy steel frame ready for mounting on 1½ to 2½ ton truck, half-track or other suitable conveyance.

Designed for the greatest number of jobs, Buda Model Y-1 Earth Drills have the stamina, speed and dependability to reduce digging costs. Quick hydraulic tower adjustments, full stroke hydraulic lift and feed, reduce set-up and drilling time to a minimum. They will drill vertical holes, or angle holes to 90° from vertical. May we send you specifications to meet your job and the name of your distributor?

The Buda Company, Harvey, Illinois

▲ Operator's position, as shown above, is safe with full view of the drilling.

◀ Drilling 45° hole for pole anchor.

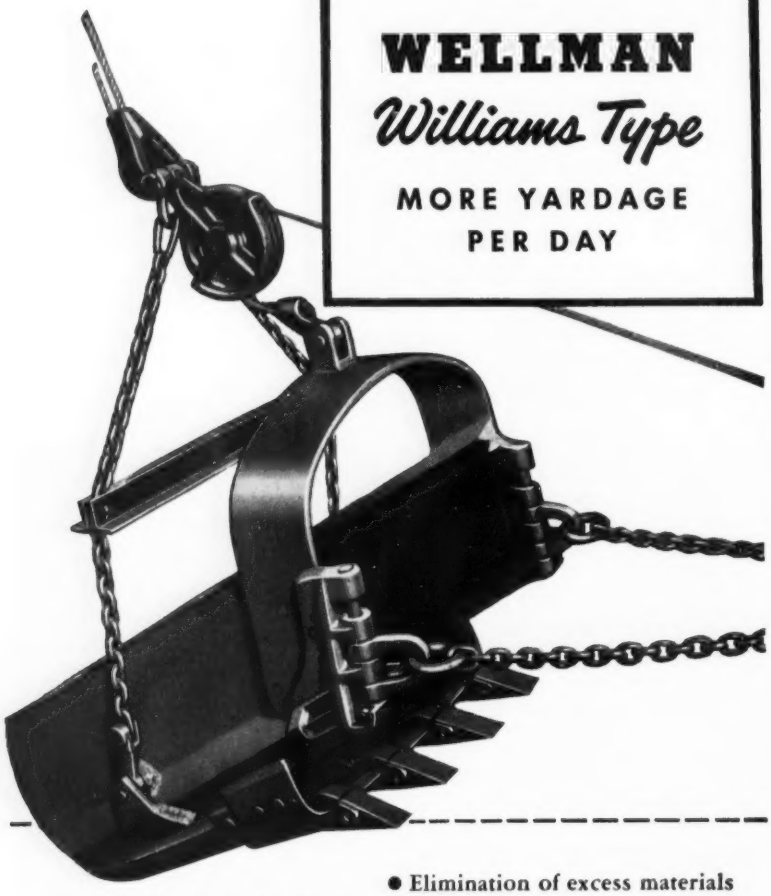
BD-11

BUDA

Building a dependable line of products since 1881

Concrete Forming Tables—*Symons Clamp & Mfg. Co., 4259 Diversey Ave., Chicago 39.* Four-page folder of tables to aid in erection of form work for slabs, columns and beams give following information: Spacing of girts or stringers when using Symons panel forms, spacing of joists and girts when using ¾″ plywood for forms, spacing of shores for both above conditions and under beams, spacing of column clamps for 2 methods of forming columns.

Timber Construction—*Timber Engineering Co., 1319 18th St., N.W., Washington 6, D. C.* Catalog, *Teco Products and Services for Users of Wood and Forest Products,* lists timber connectors and describes where each may be used to greatest advantage. Other products described include wood study kits and Colpres 10, urea resin adhesive. Teco's engineering services are described. Also listed are fields of research for which company's Lumber and Wood Products Laboratory is equipped to serve wood industries. Names and addresses of company's field offices and distributors are included.



WELLMAN
Williams Type
MORE YARDAGE PER DAY

• Elimination of excess materials and careful weight distribution permit rapid, rhythmic operation of Wellman Dragline Buckets. Operators can cover a wider digging radius with this streamlined bucket.

Built of special alloy steel, using strong welded design, Wellman buckets provide strength and stamina for long-term economy. Perforated designs also available. You'll do better with Wellman.

Want Facts?
Write for free descriptive bulletins.

THE WELLMAN ENGINEERING COMPANY
7000 Central Avenue • Cleveland 4, Ohio

DRAGLINE, CLAMSHELL, CUSTOM-BUILT BUCKETS • STONE AND WOOD GRABS

Masonry Cement—*Lone Star Cement Corp., 100 Park Ave., New York 17.* Lone Star masonry cement is presented in illustrated booklet. Analyses of properties and performance are given. Reference tables for estimating quantities are included. Pictures show buildings in which cement was used.

Pumps—*Gorman-Rupp Co., Mansfield, Ohio.* Complete line of self-priming centrifugal pumps are presented in descriptive folders. Illustrated are models ranging in capacity from 2″ to 10″. Performance tables are given, together with engineering information. Pump selection tables are included.

Asphalt Plants—*Standard Steel Corp., 5001 S. Boyle Ave., Los Angeles 58.* "RB" series of Standard asphalt plants are presented in bulletin. Features of plants presented include large dryer capacity and oversized elevators, large vibrating screens and air-handling systems, safety backstop, sectionized mixer lining, centralized controls, individual electric-motor and gear-motor drives.

Overhead Door Hardware—*Sturdee Steel Products, Co., 6820 Brynhurst Ave., Los Angeles 43.* Parts and specifications manual covers all types of home and industrial overhead door installation, excepting roll-up types. Detailed specifications for standard and "low head" jamb types, "roll-in" track and pivot installations are given. Door truss assembly information and recommendations for door dimensions are included.

Suspended Ceiling Systems—*The Sanymetal Products Co., 2093 E. 19th St., Cleveland 15.* Detailed engineering information and architectural specifications on 3 types of suspended ceiling systems are given in Catalog SNU 5 (A.I.A. File No. 39-B-1). Covered are "Nailock" universal nailing channel, "Screwlock" metal furring channel and "Utility" nailing

channel. Information is provided on Sanymetal E-Z level clip.

Aluminum Windows — *The William Bayley Co., Springfield, Ohio.* Projected windows and projected ribbon windows are presented in 1953 catalog. Specifications are given and detailed drawings are presented of sections. Layouts are included for all glass sizes, installation details are given. New "VueLine" aluminum projected ribbon windows are featured.

Crushing Equipment—*Pioneer Engineering Works, 1515 Central Ave., Minneapolis 13.* Catalog on "basic units" for stationary crushing, screening and washing plants explains purpose, features and specifications of Pioneer crushers, feeders, conveyors, vibrating screens, revolving screens, scrubbers, dehydrators, bins and related units. Several pages of detail drawings cover stationary primary units.

Prestressed Concrete—*Stressteel Corp., 207 E. 37th St., New York 16. Stressteel Manual* is handbook on large-diameter, high-strength steel tensioning units for prestressing of concrete made by newly formed company. Applications, design data, materials, specifications, construction procedures and order requirements are included.

Highway Materials Standards

The October 1952 edition of A.S.T.M. Standards on Mineral Aggregates, Concrete and Non-Bituminous Highway Materials includes in their latest form 93 specifications, test methods and definitions developed by several A.S.T.M. committees in this field. Standards cover aggregates, concrete, brick and block pavement materials; concrete curing materials, expansion joint fillers and cement.

Miscellaneous specifications and tests cover aggregate for masonry mortar; inorganic aggregates for use in interior plaster, brick paving, wooden paving block for exposed pavements; and materials for soil-aggregate subbase, base and surface courses.

Copies of publication are available from American Society for Testing Materials, 1916 Race St., Philadelphia 3, Pa., at $2.75 each.

Trouble-Free
PERFORMANCE

"It's the only machine we've had for any length of time that has had no major repairs." That's what William Wylie, equipment foreman, says about the MICHIGAN ½ yd. Crawler Excavator owned by A. G. Woods Company, Windsor, Connecticut. Yes . . . it's quite a record for an excavator that has been *"worked hard," 10 to 14 hours a day for a year and a half.*

At Woody Crest Housing Development in West Hartford, Connecticut, the MICHIGAN digs service, sewer, water and drainage ditches . . . excavates for septic tanks and basements . . . loads trucks. Digging 450 feet of trench and laying the eight inch pipe is an average day's work.

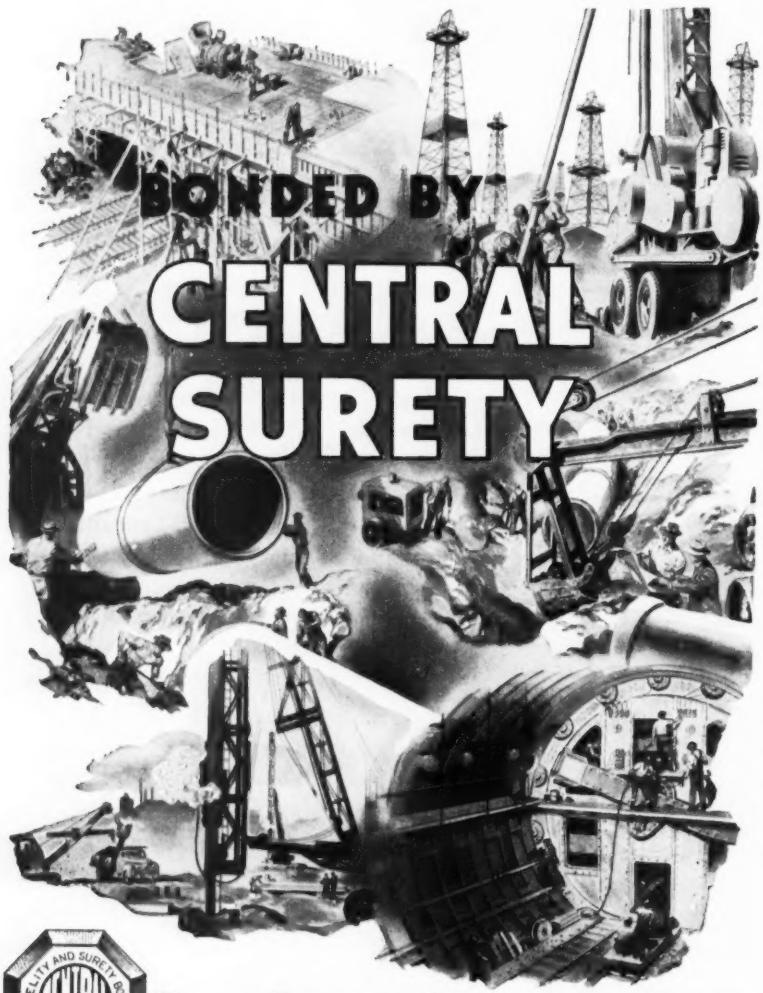
Service records like this are typical for MICHIGAN Excavator-Cranes. Why settle for less? When you need an excavator-crane . . . investigate MICHIGAN . . . you'll agree it's *your best buy!* Write, wire or phone for complete details.

MICHIGAN POWER SHOVEL COMPANY
485 Second Street, Benton Harbor, Michigan, U. S. A.

NEW LITERATURE

Bolts for Structural Joints—*Pittsburgh Screw and Bolt Corp., P.O. Box 1708, Pittsburgh 30.* High-tensile steel bolts for structural joints in buildings and bridges are presented in Bulletin 101. Included are research report on effect of various fasteners on fatigue strength of structural joint; A.S.T.M. specifications for quenched and tempered high-tensile steel bolts; specifications on assembly of structural joints using these bolts. Descriptive information and case histories are included.

Hard-Facing Alloys — *Wall Colmonoy Corp., 19345 John R. St., Detroit 3.* Catalog 77 presents complete line of hard-facing alloys. Tables present properties. "Sprayweld" process is described. List of typical applications is included.



CENTRAL SURETY AND INSURANCE CORPORATION
R. E. McGINNIS, President
HOME OFFICE KANSAS CITY, MISSOURI

MANUFACTURERS' NOTES

James M. Mead has been elected assistant vice president of JOSEPH T. RYERSON & SON, INC. He was formerly manager of the New York steel service plant of the company.

A. L. Fabens, Jr., has been appointed assistant general manager and production manager of RAMSET DIVISION of OLIN INDUSTRIES, INC.

Jack H. Gill has been appointed assistant manager of the Industrial Division in the General Sales Department of CATERPILLAR TRACTOR CO.

John W. Poulter has been appointed chief engineer for KOEHRING CO.

Frank Kuether has been named executive engineer of LE ROI CO. Wesley A. Schaefer has been appointed manager of the new industrial and plant engineering department.

R. B. Miller has retired as secretary-treasurer of THE THEW SHOVEL CO. He had been with the company 46 years. Harry L. Reynolds succeeds him as treasurer and Waid V. Clark becomes controller and secretary.

R. A. Hummel, chairman of LONE STAR CEMENT CORP., has been elected chairman of the board of directors of the Portland Cement Association.

W. L. Voegeli has been named to the newly created position of assistant director of engineering of ALLIS-CHALMERS TRACTOR DIVISION.

Robert O. Losse has been appointed general manager of HARNISCHFEGER CORP.'s truck crane and welder plants in Escanaba, Mich.

Leo M. Brown has been appointed sales manager of ST. PAUL HYDRAULIC HOIST. He succeeds William F. Keeton who has resigned to enter business for himself.

James F. Bishop, in addition to his duties as secretary-treasurer of AMERICAN HOIST AND DERRICK CO., has been appointed general manager.

First steel on a new plant for CATERPILLAR TRACTOR CO. at York, Pa., was erected October 23. After production starts next year, the facilities covering more than 400,000 square feet of floor space will enable

the company to utilize eastern steel sources and provide for better supply of replacement parts to eastern and European outlets.

Marked production increases have resulted from the completed first phase of THE BAKER MANUFACTURING CO.'s expansion program at Springfield, Ill. Shipments in October established a new record. When the second phase of expansion is completed Baker expects to reach its goal of 50% production increase before the end of the first quarter of 1953. By the end of 1953, Baker expects present production to be doubled.

Construction has begun on a new ARMCO DRAINAGE & METAL PRODUCTS fabricating plant at Mansfield, Pa. The plant will have about 25,000 square feet of space. Operations are scheduled to begin in late spring, 1953.

On November 12 WISCONSIN MOTOR CORP.'s air-cooled engine No. 2,000,000 came off the assembly line. It required 17 years to produce the first million Wisconsin air-cooled engines and only 5 years for the second million.

John B. Craig has been appointed director of purchases, AMERICAN BRIDGE DIVISION, U. S. STEEL CO., succeeding Dan Hammerschmidt who has retired after 52 years' service.

Welded Bridge Design Awards

The James F. Lincoln Arc Welding Foundation, in announcing awards in its 1952 bridge design competition, "Welded Bridges for Steel Conservation," says designs showed an average saving in steel, made possible by welded construction, of approximately 20%.

First award went to Elwyn H. King, Long Beach, Calif., for a welded design of a 7-span deck girder bridge. Second award was to Kiser Dumbauld of the Ohio State Highway Department for his re-design of one of the state's bridges. Third award was shared by Thomas Kavanagh and Leo Coff of New York University and Pennsylvania State College respectively.

The foundation has published 2 books on its previous award programs and is planning a third based on the competition just closed.

All space in and around Kinnear-equipped doorways is fully usable at all times — both inside and outside the opening.

Work space and window areas can continue right up to the jambs of Kinnear Rolling Doors.

These are just a few of the reasons why you get maximum door efficiency, space economy and protection when you install

KINNEAR STEEL ROLLING DOORS

Ceiling space remains clear, for maximum use of cranes, conveyors, or hoists in and around door areas. Kinnear Doors can also be arranged to accommodate crane tracks extending through opening.

No other type of service door combines such high efficiency with the effective protection of Kinnear Rolling Doors.

Proved and preferred through more than half a century . . . built *to fit* any opening . . . manual or electric operation. Write for new catalog today.

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FACTORIES
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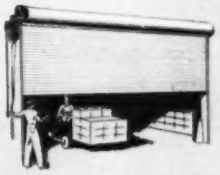
1742 Yosemite Ave., San Francisco 24, Calif.
Offices and Agents in All Principal Cities

KINNEAR ROLLING DOORS



Kinnear Motor Operated Doors open, close, or stop at the touch of a button, or by means of other types of manual or automatic control devices.

Wind is never a hazard to Kinnear Rolling Doors. The rugged steel slats are anchored in steel jamb grooves from floor to lintel.

The vertical action of Kinnear Rolling Doors is not blocked by snow, ice, gravel, or uneven ground.

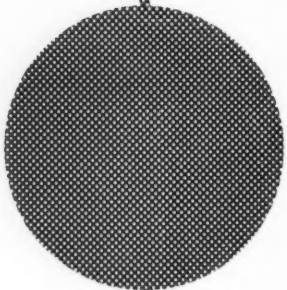
minutes are MONEY

No one knows better than we do the hard work and long hours you put into every bid for an important contract.

While we cannot help with your estimating, we *can* save you time just when you're busiest.

When you have a "working partnership" with the local F&D representative, your phone call is all he needs to execute your bond. No lengthy interviews or inquiries. He'll *know* your operation, and *reputation*, too.

Before that next contract comes up, why not get acquainted with the F&D man in your community...and let him blueprint a plan for *fast action when you need it.*



FIDELITY AND SURETY BONDS
BURGLARY AND OTHER NEEDED
FORMS OF INSURANCE

FIDELITY AND DEPOSIT COMPANY
Baltimore *Maryland*

AFFILIATE: AMERICAN BONDING COMPANY OF BALTIMORE

ADVERTISERS' PRODUCTS

Manufacturers' addresses are listed on page 94

Aggregate (Light-Weight)
Great Lakes Carbon Corp.
Building Products Division

Air Entraining Agents
A. C. Horn Co.

Asphalt Plants (Portable)
Barber-Greene Co.
Iowa Mfg. Co.
White Mfg. Co.

Axles (Truck)
Eaton Mfg. Co., Axle Division

Backfillers
Bucyrus-Erie Co.
Cleveland Trencher Co.
Gradall Division
Harnischfeger Corp.
Parsons Co.
Unit Crane and Shovel Corp.

Batchers
Blaw-Knox Division
Construction Machinery Co.
Heltzel Steel Form & Iron Co.
C. S. Johnson Co.

Bearings (Anti-Friction, Tapered Roller)
Hyatt Bearings Division
Timken Roller Bearing Co.

Bins
Blaw-Knox Division
L. Burmeister Co.
Heltzel Steel Form & Iron Co.
Iowa Mfg. Co.
C. S. Johnson Co.

Bits (Detachable Drill)
Timken Roller Bearing Co.

Bridges
American Bridge Division
Armco Drainage & Metal Products

Buckets (Clamshell & Dragline)
Blaw-Knox Division
Bucyrus-Erie Co.
Harnischfeger Corp.
C. S. Johnson Co.
Owen Bucket Co.
Wellman Engineering Co.

Buckets (Concrete)
Blaw-Knox Division
Construction Machinery Co.
Heltzel Steel Form & Iron Co.
Owen Bucket Co.

Buildings (Steel)
Allied Structural Steel Cos.
American Bridge Division
Armco Drainage & Metal Products
International Steel Co.
Macomber, Inc.
Truscon Steel Co.

Bulldozers
Bucyrus-Erie Co.
R. G. LeTourneau, Inc.

Car Pullers
Clyde Iron Works

Cement (Common and Special)
Lehigh Portland Cement Co.
Lone Star Cement Corp.
Marquette Cement Mfg. Co.
Universal Atlas Cement Co.

Cement (White)
Trinity White, General Portland Cement Co.
Universal Atlas Cement Co.

Clamps (Hose)
Dixon Valve & Coupling Co.

Clothing (Cold Weather)
Insulated Clothing Mfg. Co.

Compressors
Allis-Chalmers Co.
LeRoi Co.

Concrete Curing Material
A. C. Horn Co.

Concrete Mixers, Pavers, Tampers
Chain Belt Co.
Construction Machinery Co.
Foote Co.
Jaeger Machine Co.
Knickerbocker Co.
Koehring Co.
Kwik-Mix Co.
T. L. Smith Co.
Worthington Corp.

Concrete Vibrators
Concrete Surfacing Machinery Co.
Electric Tamper & Equipment Co.
Independent Pneumatic Tool Co.
Mall Tool Co.
Vibro-Plus Products, Inc.
White Mfg. Co.

Conveying Machinery
Barber-Greene Co.
Chain Belt Co.
Iowa Mfg. Co.
Smith Engineering Works

Cranes
Austin-Western Co.
Bucyrus-Erie Co.
Cleveland Trencher Co.
Clyde Iron Works
Harnischfeger Corp.
Koehring Co.
R. G. LeTourneau, Inc.
Michigan Power Shovel Co.
Northwest Engineering Co.
Thew Shovel Co.
Unit Crane and Shovel Corp.

Crushing Machinery
Allis-Chalmers Co.
Austin-Western Co.
Iowa Mfg. Co.
Smith Engineering Works

Culverts
Albert Pipe Supply Co.
Armco Drainage & Metal Products

Cutters (Abrasive)
Wodack Electric Tool Corp.

Decking (Roof Steel & Aluminum)
Macomber, Inc.

Derricks
Clyde Iron Works

Doors (Metal, Wood)
Ceco Steel Products Corp.
International Steel Co.
Kinnear Mfg. Co.
R. C. Mahon Co.
Truscon Steel Co.

Dredging Machinery
Bucyrus-Erie Co.
Harnischfeger Corp.
Northwest Engineering Co.

Drills & Drilling Machinery
Bucyrus-Erie Co.
Buda Co.
Independent Pneumatic Tool Co.
Timken Roller Bearing Co.

Drills (Electric)
Wodack Electric Tool Corp.

Elevators (Material)
Chain Belt Co.
Iowa Mfg. Co.
Smith Engineering Works

Engines
Allis-Chalmers Tractor Div.
American Hoist & Derrick Co.
Buda Co.
Caterpillar Tractor Co.
Continental Motors Corp.
Cummins Engine Co.
Detroit Diesel Engine Division
Harnischfeger Corp.
International Harvester Co.
LeRoi Co.
Wisconsin Motor Corp.

Estimating Methods
Roche Estimating Methods

Expansion Joints
Laclede Steel Co.

Financing
C.I.T. Corp.

Finishing Machines (Bituminous)
Barber-Greene Co.
Blaw-Knox Division

Finishing Machines (Concrete)
Blaw-Knox Division

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Truscon Steel Co.

Forms (Concrete) and Accessories
Blaw-Knox Division
Economy Forms Corp.
Gateway Engineering Co.
Heltzel Steel Form & Iron Co.
A. C. Horn Co.
Joseph T. Ryerson & Son, Inc.
Symons Clamp & Mfg. Co.
Universal Form Clamp Co.

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Caterpillar Tractor Co.

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Allis-Chalmers Tractor Div.
Austin-Western Co.
Caterpillar Tractor Co.
Euclid Road Machinery Co.
Galion Iron Works & Mfg. Co.
Gradall Division
Koehring Co.
W. A. Riddell Corp.

Gravel Plants (Portable)
Iowa Mfg. Co.
Smith Engineering Works

Grinders (Electric)
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Wodack Electric Tool Corp.

Hammers (Electric)
Independent Pneumatic Tool Co.
Wodack Electric Tool Corp.

Hoists
American Hoist & Derrick Co.
Clyde Iron Works
Construction Machinery Co.
Harnischfeger Corp.
McKiernan-Terry Corp.

Hose (Air, Water, Steam, Suction)
United States Rubber Co.

Industrial Financing
C.I.T. Corp.

Insurance (Automobile, Casualty, Compensation, Liability)
Aetna Casualty & Surety Co.
Central Surety & Insurance Corp.
Employers Mutuals of Wausau

Jacks
Buda Co.

Jacks (Scaffold)
Wilson-Albrecht Co.

Joists (Steel)
Ceco Steel Products Corp.
Laclede Steel Co.
Macomber, Inc.

Kettles, Heating (Asphalt & Tar)
White Mfg. Co.

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LeRoi Co.

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J. D. Adams Mfg. Co.
Barber-Greene Co.

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Gulf Oil Corp.
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Dixon Valve & Coupling Co.

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PORTLAND CEMENT

A *whiter* white cement that gives greater beauty wherever used. It is a true portland cement. General Portland Cement Co., 111 W. Monroe St., Chicago; Republic Bank Bldg., Dallas; 816 W. 5th St., Los Angeles; 305 Morgan St., Tampa; Volunteer Bldg., Chattanooga.

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Armco Drainage & Metal Products
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Naylor Pipe Co.

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Jaeger Machine Co.
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Gorman-Rupp Co.
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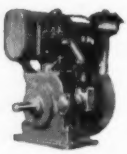
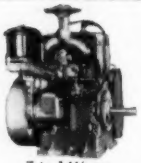
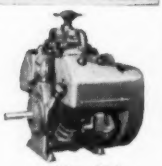

6 to 9 hp.


7 to 14½ hp.


15 to 36 hp.

WISCONSIN HEAVY-DUTY Air-Cooled ENGINES

Based on data contained in a "Facts for Industry" report released on Sept. 5, 1952 by the U. S. Bureau of the Census, an aggregate average of 50.61% of all carburetor type internal combustion engines produced during 1950-'51 within an 11 to 175 cu. in. displ. range (approx. 3 to 40 hp.) were WISCONSIN HEAVY-DUTY AIR-COOLED ENGINES (exclusive of aircraft, automotive, outboard marine and "captive" engines built by various manufacturers for use on their own equipment).

Here is positive proof of top preference for Wisconsin Engines both by original equipment manufacturers and users of power-operated equipment. Proof of constantly growing recognition of the special adaptability of these fine engines to fit both the machine and the job. Proof of heavy-duty dependability and trouble-free air-cooling under weather and climatic extremes.

Wisconsin general-purpose Air-Cooled Engines have been *pre-judged* and *pre-selected* by more power-wise purchasers than ALL other makes of engines combined, within a 3 to 40 hp. power range. Perhaps it's your turn to specify "Wisconsin". Descriptive literature and engineering data on request.

WISCONSIN MOTOR CORPORATION
World's Largest Builders of Heavy-Duty Air-Cooled Engines
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Fast Country-wide Service

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Smith Engineering Works

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Northwest Engineering Co.
Thew Shovel Co.
Unit Crane and Shovel Corp.

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R. C. Mahon Co.

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Galion Iron Works & Mfg. Co.

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Iowa Mfg. Co.

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American Bridge Division
Bethlehem Steel Co.
Flint Steel Corp.
International Steel Co.
Macomber, Inc.
Joseph T. Ryerson & Son, Inc.
Truscon Steel Co.

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American Surety Co.
Central Surety & Insurance Corp.
Employers Mutuals of Wausau
Fidelity & Deposit Co.
Fire Association of Philadelphia
Insurance Co. of North America
National Surety Corp.
Phoenix-London Group

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United States Rubber Co.

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Caterpillar Tractor Co.
International Harvester Co.
Oliver Corp., Industrial Div.

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Cleveland Trencher Co.
Gradall Division
Harnischfeger Corp.
Independent Pneumatic Tool Co.
Michigan Power Shovel Co.
Parsons Co.
Unit Crane and Shovel Corp.

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Safway Steel Products, Inc.

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Eaton Mfg. Co., Axle Division

Trucks (Heavy Rear-Dump)
Euclid Road Machinery Co.

Trucks (Motor)
International Harvester Co.

Trusses (Steel)
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Tunnel Liner Plates
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Valves (Air—Self-Honing)
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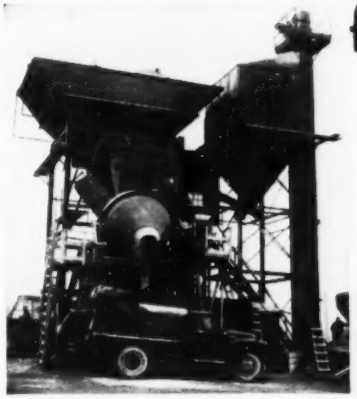

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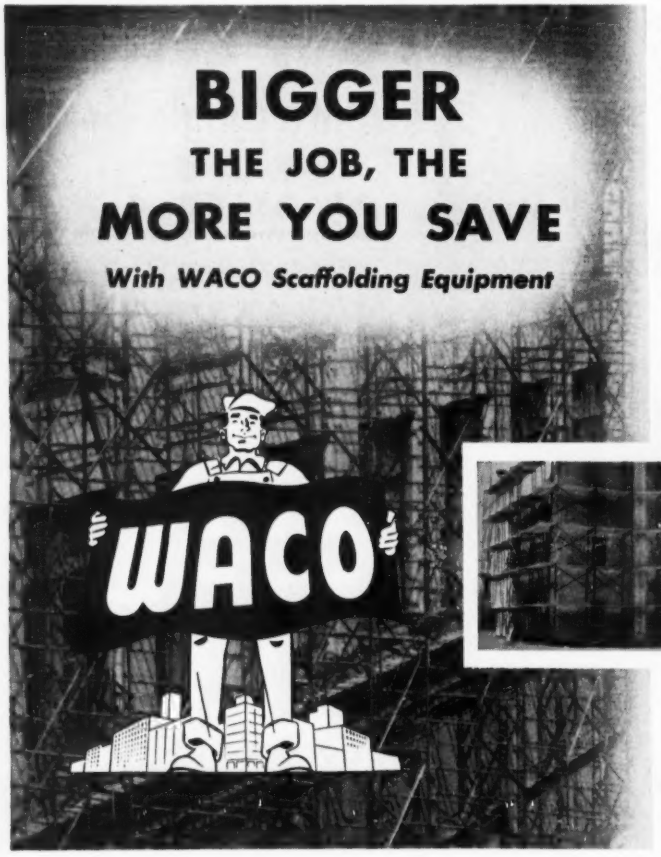

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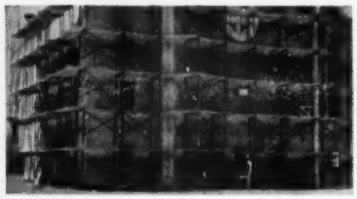

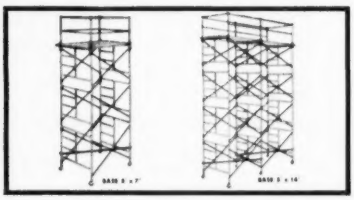

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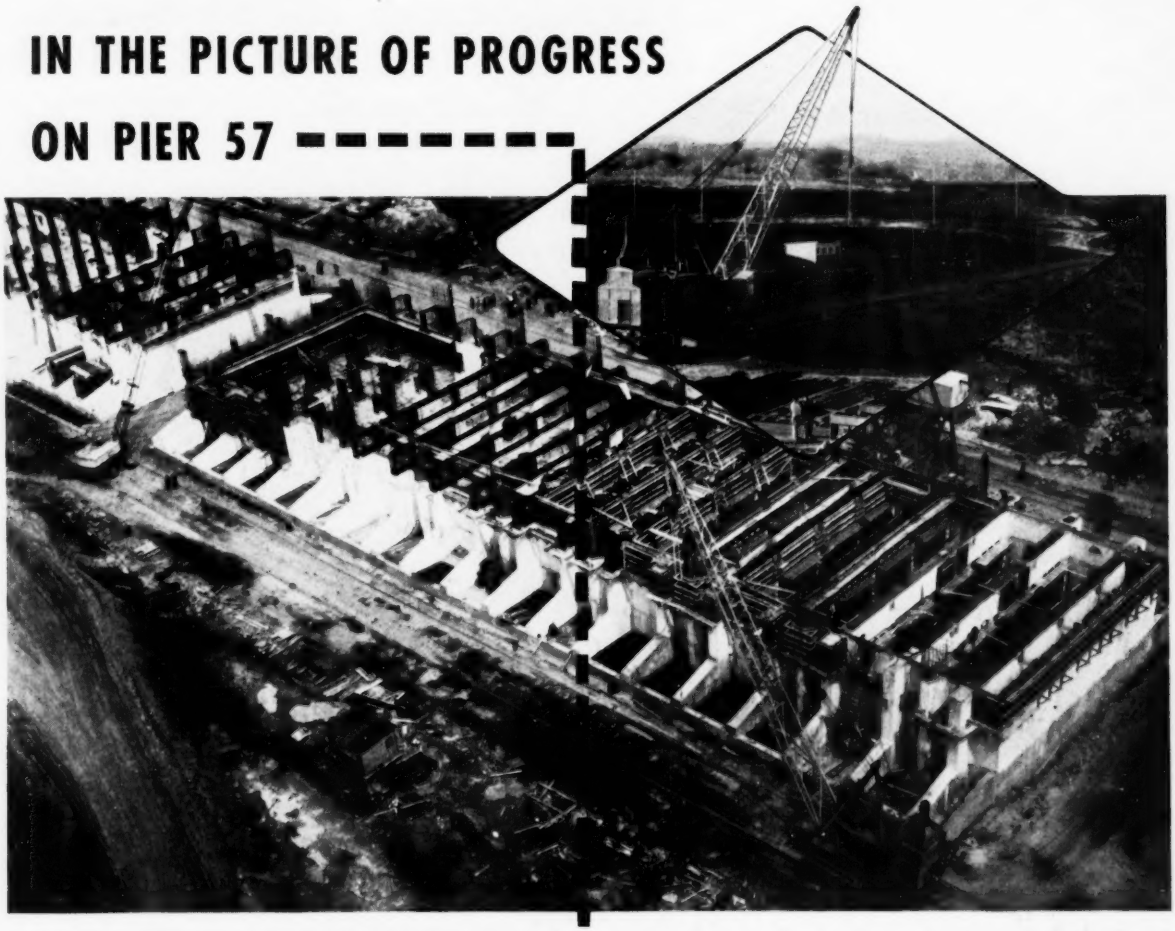

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